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THE LIKENESS OF THE CORTICAL DYSRHYTHMIAS OF SCHIZOPHRENIA AND PSYCHOMOTOR EPILEPSY.*

By F. A. GIBBS, E. L. GIBBS and W. G. LENNOX,
Boston.

Throughout the history of medicine, its leaders have not been content with observing and classifying disease on the basis of clinical symptoms alone, but have tried to ascertain the cause or causes of these surface manifestations. These efforts have led to the development of the fundamental sciences of pathological anatomy, physiology, biochemistry and psychology. By dint of hard work on the part of clinicians and laboratory specialists the fundamental pathophysiology of many illnesses has been revealed. In contrast, knowledge of the cause of serious disorders of the brain and of the mind is still almost medieval. Unlike cardio-vascular or metabolic diseases there has been until recently no technique for analyzing or recording the essential activity of the brain. Workers have had to depend on observations of muscle movements or of sensation which but partially indicate what is actually going on in the brain. Like the efforts to read a person's thoughts by observing his face, there may be a wide hiatus between underlying activity and the expression of that activity. Some of this hiatus is bridged by the recording of the electrical activity of the cortex, now made possible by means of the electro-encephalograph.

Does this new technique (elaborate and interesting though it be) register only certain events which are a by-product of cortical activity, or does it record the fundamental activity of the brain—on the basis of which cerebral and mental disturbances may be classified?

* Read at the ninety-fourth annual meeting of The American Psychiatric Association, San Francisco, Calif., Jan. 6-10, 1938.

From the Neurological Unit of the Boston City Hospital and Department of Neurology of Harvard Medical School. This is paper number 29 in a series entitled "Studies in Epilepsy." Aid was received from the Josiah Macy, Jr., and the Rockefeller Foundations and from the Harvard Epilepsy Commission.

That we are dealing with a fundamental, constitutional mechanism which reflects the essential working of the individual brain is suggested by the following facts. Each individual has his own pattern of electrical activity which, like his handwriting, can be distinguished from that of other individuals and which under standard conditions maintains its individuality from day to day. Furthermore, as Davis [1] has shown, normal persons who are related have records which bear a resemblance to one another, and the records of normal identical twins are closely similar. We have observed this also, and furthermore have found that abnormalities of cortical rhythm may be present in various members of the same family. This is most striking in the case of identical twins. One family, which we examined, consisted of five members, only one of whom, a boy of 14, had symptoms of central nervous system disorder. He had petit mal. The other four members had no complaints but the father and the identical twin sisters had abnormality of rhythm which in all three was most pronounced in the right motor region. The father had an aunt in a mental hospital. In this family, therefore, the electrical evidence suggests that the father and two daughters, though now asymptomatic, are potentially abnormal, whereas the boy is both clinically and electrically abnormal.

If then the electrical activity of the brain is a biological constant and if the electro-encephalogram records constitutional characteristics of the functioning brain, of what use is it in the study and treatment of brain disorders? Before workers can answer this question, they must know the cortical activity of normal persons, and the variations which occur with physiological changes. The beat of the brain, like that of the heart, varies with age, activity, temperature and metabolic rate as well as with disease of the organ itself. When there is no rhythm of brain or heart or respiration, the person is dead. Fig. 1 is a schematic representation of the normal and physiological conditions which are associated with increase or decrease in the rate of cortical electrical waves. Every electro-encephalogram must be interpreted against the background of these conditions.

This presentation is concerned with the abnormal rhythms of certain nervous and mental disorders. In other papers [2] we have stated that the pathological physiology of epilepsy is a paroxysmal cerebral dysrhythmia but that dysrhythmia is not peculiar to epi-

lepsy. In addition to the psychoses, of which we shall speak later, disturbances of cortical rhythm are described in patients with increased intracranial pressure or with tumors or other lesions of the cortex,[3] and will doubtless be found in other neurological conditions.

When the specific type of dysrhythmia found in various clinical conditions is considered, the apparent difficulty is encountered that patients bearing different clinical diagnoses may show the same al-

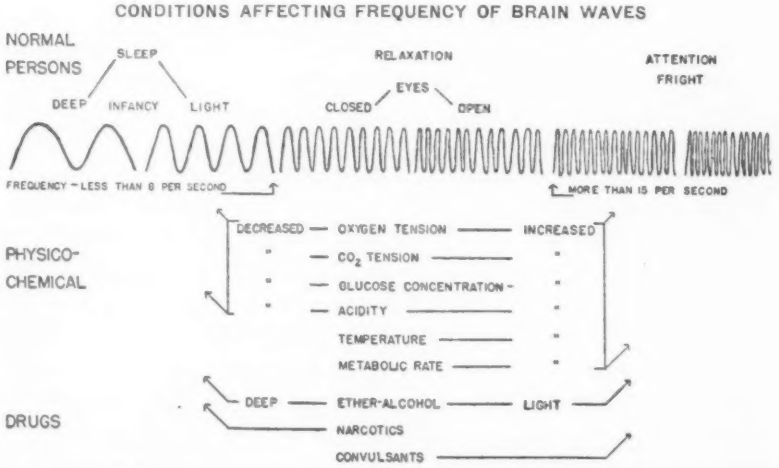

FIG. 1.—Schematic representation of conditions which affect the frequency of electrical waves of the brain. The curved lines are samples of various frequencies. The words above the line note the changes in activity of the normal subject which cause changes in frequencies. The frequency of the normal adult when awake and relaxed is from 8 to 15 oscillations per second. In deep sleep the frequency is greatly slowed, while in conditions of attention and fright, it is unusually fast.

Beneath the curves certain of the physico-chemical or pharmacologic states which alter the frequency of waves is indicated. Arrows point to the direction in which frequency is changed—either slow or fast.

teration of rate, either slow or fast. For example, a patient with epilepsy, one with schizophrenia, and an apparently well person who has outbursts of temper may all have abnormally slow, square waves of somewhat increased voltage. Nor is this all, for rarely a person who considers himself and is considered entirely normal has waves of abnormal frequency. However, in our experience such a person is either the near relative of a patient with abnormal waves or else has himself shown traits of behavior which cast some doubt on his normality. Conceivably a person with an abnormal rhythm may go

through life without clinical manifestations of disorder, just as he may go through life with a refractive error of the eyes, or an achlorhydria or a leaking heart valve but never suffer symptoms from this defect. Given sufficient precipitating factors, the unseen defect may appear in symptoms, or it may be passed on to succeeding generations.

Antecedent to the abnormal rhythm is some alteration of the chemistry of nerve cells which influences the rate and the voltage of their discharge. The thing which causes the alteration in individual cases may be different; a spirochete, a trauma, a lack of oxygen may each result in a five a second high voltage rhythm. Therapeutic efforts should directly or indirectly aim at stabilizing the rate-regulating mechanism, though the method used might differ in each case. Though the curved lines traced by the electro-encephalograph are not the ultimate in etiology, they more nearly represent abnormal cortical function than do clinical manifestations.

In view of these considerations, we believe physicians should consider dysrhythmia of the electrical waves of the brain as primary and various clinical manifestations of dysfunction of the brain or of the mind as secondary. Abnormal cortical waves may not be demonstrable with the technique available but when they are present they should take precedent in classification, in nomenclature and possibly in treatment.

If a certain type of cortical dysrhythmia is the common denominator of a variety of mental or behavior disorders, it behooves workers in this field to classify abnormalities of rhythm and note the concomitant mental or neurological state of the patient. Our practice is to take a prolonged record of each patient (for from 15 minutes to several hours), and to judge by close inspection of the whole record. The two cardinal considerations are abnormality in the rate or in the pattern of electrical waves, but the number of abnormal waves, their sequence, their voltage and their similarity in various cortical areas are important points in evaluation.

As for the rate of waves, a prominence of frequencies slower than seven per second must be considered abnormal for an adult under standard conditions.

However, the configuration as well as the rate of the waves is important in the differentiation of various dysrhythmias. In the Morse code, a certain combination of dots and dashes spells out a

message. Just so, combinations of waves of different shapes and of different frequencies indicate certain disorders of the brain. We have made electro-encephalograms of more than 1000 patients. Examples of various rhythms which have been segregated and identified in various types of patients are represented schematically in Fig. 2.

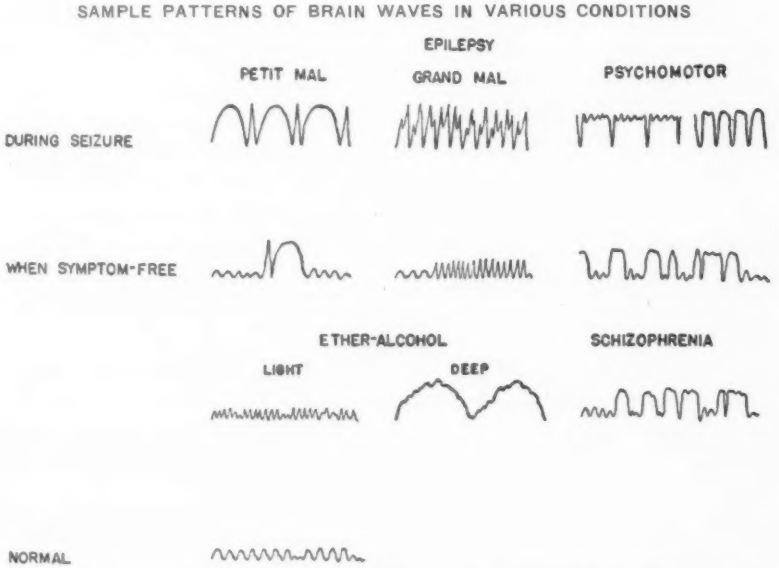

FIG. 2.—Schematic patterns of brain waves encountered in various conditions. Not only the frequency of waves, but the relationship between slow and fast waves is significant. The uppermost row of curves indicates the pattern of brain waves during various types of epileptic seizures. The second row indicates the pattern in these same patients at times when they are free of seizures. The third row shows the pattern in patients under the influence of ether and of alcohol and a patient with schizophrenia. At the bottom is a portion of a normal curve for purposes of comparison.

The rhythm in grand mal seizure, described first by Berger [4] is excessively fast, the waves appearing as sharp spikes of great voltage. The most easily recognized of arrhythmias is that which accompanies petit mal. First described by Gibbs, Davis and Lennox [5] this is an alternate long and short (wave and spike) formation. The exact configuration of the waves, the number and height of spikes and the duration of the wave, is different for each patient and varies somewhat with circumstances, but anyone having this

pattern is a wave and spike person or, in clinical phraseology, a petit mal epileptic. We have records of attacks lasting from ½ second to 18 minutes. They may or may not be accompanied by loss of consciousness, by twitching of muscles, by recognizable change in the patient's appearance or by knowledge on the part of the patient that the attack is occurring or has occurred. The third primary pattern encountered in epilepsy was described by us [2] a year ago. It occurs in psychomotor (psychic equivalent) seizures and consists of square waves and high voltage 6 per second waves. Very slow waves with faster activity superimposed, like ripples on ocean swells, occur in deep anaesthesia.

Information of this nature is indeed thrilling, but the curves traced on moving paper or film do not divulge the more intimate secrets of the brain's activity. Some of the hidden information is obtained through use of an analyzer, of which we will speak shortly.

We come now to the important question of the relationship of epilepsy and schizophrenia, a question which is sharpened by the contention of Meduna [6] that there is a natural antagonism between the two. The principal arguments in favor of such a theory are two: first, the supposedly infrequent coincidence of the two conditions; and second, the clinical improvement observed in patients with schizophrenia when convulsions are induced by means of insulin or camphor.

We believe that what relationship there is between these two disorders is not negative but positive. Our belief rests on three types of evidence—statistical, therapeutic and electrical.

The statistical evidence in the literature proves to be both meager and contradictory. Partly this is due to the fact that "epilepsy" and "schizophrenia" are both wastebasket terms. Each is an example of a variety of symptoms herded together without benefit of the binding influence of an accepted etiological pathology. In such a primitive state of thought, the occurrence of a convulsion automatically brands a person as epileptic, and if there is also defect of mentality, he is branded psychosis with epilepsy, and is thereby not counted in any enumeration of schizophrenics.

Unsatisfactory though the evidence is, most of the published estimates of the coincidence of epilepsy and schizophrenia are far above the incidence of epilepsy in the general population. Epilepsy is present in about 0.5 per cent of the population, whereas it

occurred in 15 per cent of Jasper's [7] group of carefully studied schizophrenics. This percentage may be too high, but it certainly suggests that the coincidence of these two conditions is positive and not negative. Further evidence is that of Stein.[8] The incidence of psychoses among the relatives of institutional epileptic patients was twice the incidence found among relatives of a control group.

As for the therapeutic argument, the inference has been that induction of hypoglycemia improves symptoms of schizophrenia but would not improve those of epilepsy. On putting the matter to the test, we have observed that, at least so far as petit mal is concerned, remissions of seizures can be secured by a mild type of insulin therapy.[9]

The third, and for our present purpose, the most important evidence, concerns the electrical activity of the brain. We propose in this paper to amplify descriptions of the peculiar waves associated with the psychomotor seizures of epilepsy and to identify these with patterns encountered in some psychotic or psychopathic patients who have not had grand mal or petit mal seizures.

Reports of electro-encephalographic investigations dealing with schizophrenia were at first disappointing. Travis and Malamud,[10] and Jasper [11] reported normal records in this condition. The largest series was 63 patients observed by Jasper. In none of his records did he "see anything clearly unlike that sometimes obtained with normal subjects." On the other hand, Hoagland [12] described swings of the base line, delta waves, which were more pronounced in schizophrenic patients than in normals and in these patients when clinically at their worst. Jasper [7] now reports abnormal waves in a substantial proportion of schizophrenic patients, and Davis and Davis [13] find abnormalities in all types of psychoses encountered in a mental hospital.

These authors report waves with abnormal rates or abnormal voltage and they speak of the similarity with waves seen in epileptics. Because patients with epilepsy may have various patterns, we wish to be more specific. The majority of schizophrenic patients whom we have examined have shown abnormalities of rhythm, either fast or slow. That relatively few showed fast grand mal activity may be because patients who were having convulsions were not included. None of the records showed petit mal seizures. To us, the striking thing has been the similarity of many of the records of schizo-

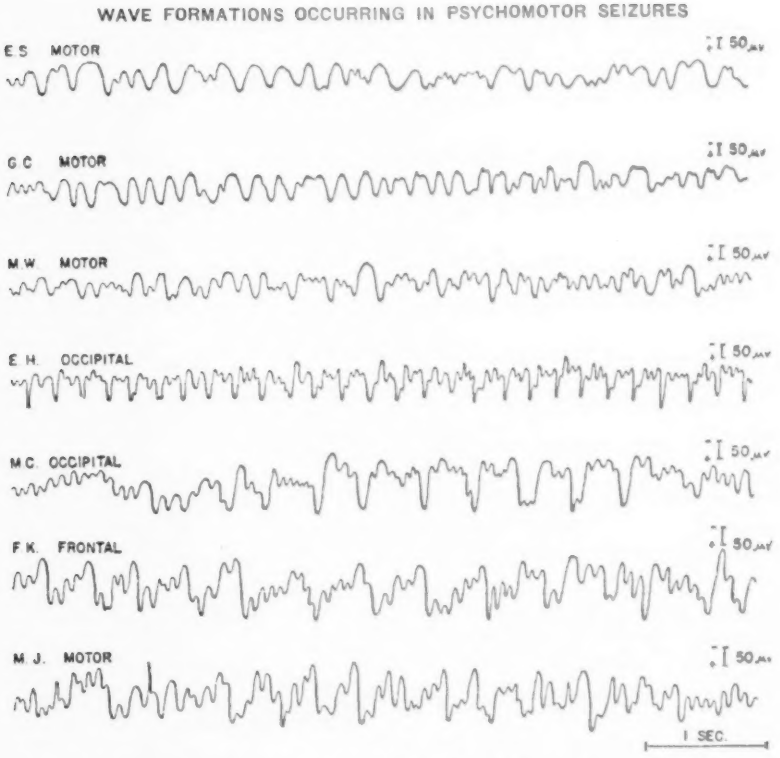

FIG. 3.—Electrical activity of the cortex during psychomotor seizures in seven patients. (From an article by the authors in Brain 40: 381, Dec. 1937). In each case the segment shown represents but six or eight seconds of a psychic seizure which may have lasted for minutes. In this and Figs. 4, 5 and 6 the signal made by 50 microvolts is indicated at the right and the space occupied by one second at the bottom. These records closely resemble those seen in Fig. 5, but the duration of the abnormality was much shorter.

The distinguishing feature of these records is the presence of many high voltage rather square-shaped waves with a frequency of from three to seven per second. The patient whose record is labelled E. S. had a seizure in which she cried, "I am having the heart scared out of me," and would let no one touch her. G. C. mumbled, flexed her arms and legs and attempted to get out of the chair. M. W. cried, "I can't stand it," and began to tear her clothes. E. H. grumbled about his boss, dropped his pipe from his mouth, lit a match and tried to pull the electrodes off his head. M. C. repeatedly said, "Where is my pocketbook." F. K. mumbled incoherently, tore up a letter and tried to eat it. M. J. groaned repeatedly and tried to pull the electrodes off his head. In all seizures there was anxiety and negativism with appropriate but poorly co-ordinated movements.

Compare these with a normal tracing such as appears at the bottom of Fig. 6.

phrenics with those obtained in epileptics who had a history of psychomotor seizures. The fact that some patients show a perfectly normal record indicates, we presume, that either the patient was normal at the time the record was taken or else dysrhythmias present in subcortical areas did not reach the cortex and therefore were not recorded.

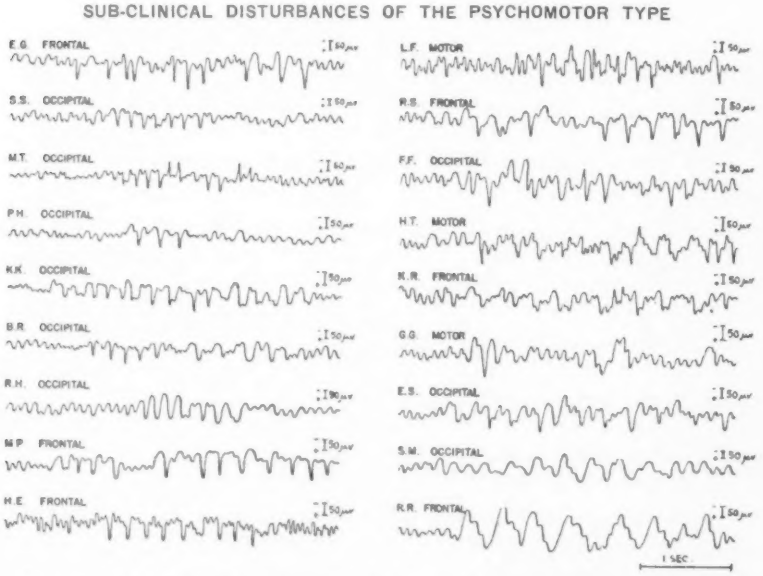

FIG. 4.—Sub-clinical disturbances of the psychomotor type. Each of these 18 tracings is from a patient who is subject to seizures of the type often called psychic equivalents, but which we prefer to call psychomotor. During the period in which the record was taken, however, patients presented no objective or subjective evidence of a seizure. In each instance a very short portion of the patient's normal record appears at the left of the curve. Also each curve is labeled as to whether the lead was applied to the frontal, motor or occipital area of the scalp.

During a psychomotor seizure, as we have previously reported [2] the electrical pattern is of a rather fast normal voltage (15 to 20 a second) broken three to five times a second by a high voltage positive spike (Fig. 3). When such a patient is not having a seizure the abnormal waves are of two forms; first, isolated square topped waves, a smoothed image of the strikingly characteristic waves seen in the seizure, and second, waves with a frequency of about 6 a second, large smooth rounded waves, usually of higher voltage than normal (Fig. 4). These two wave patterns, which are interspersed

frequently through the records of patients with all types of epilepsy (but predominantly in those with a history also of psychomotor seizures) are the most obvious types of abnormality encountered in patients diagnosed as schizophrenic.

Fig. 5 compares the records obtained in two individuals with contrasting histories but with similar electrical activity. The first

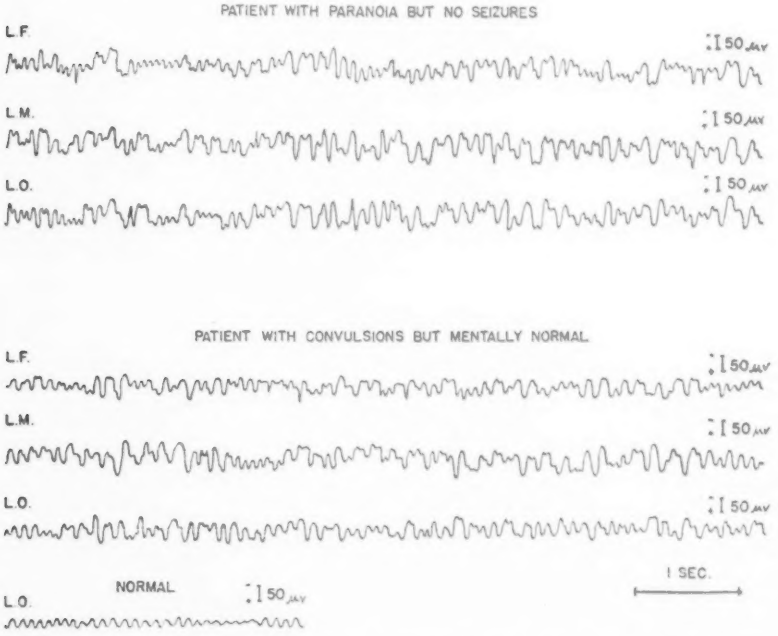

FIG. 5.—Tracings of a patient with paranoia with no history of seizures, compared with those of a patient subject to convulsions, but mentally normal. In each patient simultaneous records from 3 areas of the head, left frontal, left motor and left occipital are shown. Neither patient exhibited objective abnormalities at the time records were taken. At the bottom is a short strip of a normal person's record for comparison. In both patients the record consists largely of waves with a frequency of from three to seven a second. They are alike and also closely resemble the tracings from patients with a history of psychic epilepsy shown in Fig. 3.

pair of tracings are those of a graduate student, working for his Ph. D. in psychology, who came to the laboratory looking for radio apparatus from which came voices which influenced his thoughts and urged him to commit suicide. He was an outspoken paranoid without history of convulsive seizures. The second pair of tracings

are those of a mentally brilliant college freshman who has had two generalized convulsions, preceded by a brief psychic episode. Leaving to one side the presence or absence of history of grand mal or petit mal, we believe the psychotic and the epileptic patients whom we have studied have fundamental clinical resemblances in that both are subject to periods of acute mental disorder often accompanied by disturbed motor functions.

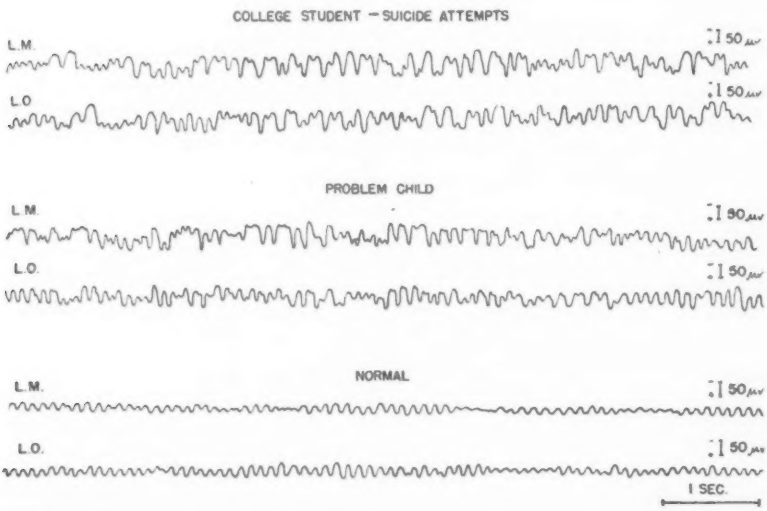

FIG. 6.—Comparison of the records obtained in "problem" persons. The upper two tracings (taken respectively from the left motor and left occipital region) are from a college student considered mentally normal who had on two occasions attempted suicide without adequate provocation. The second record is from a child who had periods of severe misbehavior, causing him to be diagnosed as "psychopathic personality." The third record is from a normal person for purpose of comparison. The records of both patients are full of square topped waves similar to those encountered with patients who have psychic seizures.

The problem is still further widened by the fact that other persons without either of these two diagnoses but who have outbursts of uncontrolled emotional expression may also show large slow waves on the electro-encephalogram. Fig. 6 gives the records of two such patients. The first is that of a college freshman always considered normal who, on two occasions, attempted suicide without apparent reason. The second is a child who was a behavior problem—stealing, truancy, destructiveness, etc. If the histories of these patients were

not known, we doubt if the tracings could be distinguished from those of patients with a history of convulsive or petit mal (and psychomotor) seizures. Of a selected group of 23 severe "problem children," diagnosed as psychopathic personality but without history of petit or grand mal, sent from the Home for Little Wanderers for examination, approximately 90 per cent had abnormal records of this psychomotor type. Our observations on this point are in general agreement with the report of Jasper and Nichols.[14]

These cases are brought forward to demonstrate the point made in the beginning that just as persons with heart disease may have different symptoms, persons with a certain type of cerebral dysrhythmia may exhibit symptoms which have caused them to be given widely differing diagnoses. The disorders of behavior encountered in individuals who display psychopathic, schizophrenic or other unlabeled abnormal traits, when accompanied by the disorders of cortical rhythm present in epilepsy, suggest that all of these might be considered various manifestations of epilepsy, of psychosis or of whatever clinical term one wishes to apply. Boundary fences are of little importance in a bog. Present terms serve a practical administrative purpose. Physicians may not wish to be free of them but they should seek the freedom of thought which makes terminologies secondary to underlying vital processes.

The comparisons so far have dealt with inspection and caliper measurements of the electrical waves as they are traced on moving paper. These methods do not, however, extract information concerning waves too fast to be properly recorded by an ink writer nor could one without enormous labor calculate how many waves of a certain rate or voltage are present in a given record. New possibilities for study of records have been opened by the development by Grass and F. A. Gibbs [15] of a frequency analyzer which tells the amount of energy in any frequency in a given record.

For example, on inspecting an ordinary record one may say there is much 10 per second activity and little 4 per second on this record, but with the aid of the analyzer it is possible to say exactly how much there is of 10 per second activity, exactly how much of 4 per second and also exactly how much of 4.2 or any other frequency that one desires to consider.

The distribution of energy through the various frequencies is not smooth but consists of jagged peaks standing at various points on

the abscissa scale of frequencies. Presumably each peak represents the energy output of certain similar functional units in the brain. In the normal subject the greatest total amount of energy liberated is the 10 or 12 per second band, but there are peaks also at about 7 and 20. In most epileptic as well as psychotic patients there are two features which need to be pointed out. First is a shifting of the whole curve to the left. The proportion of waves with a low frequency is greatly increased over the proportion seen in normal individuals. The second point is the absence of certain small peaks of the higher frequencies which are present in normal individuals. These points are details which must be worked out with further research. For the present we wish to point out that epileptic and psychotic individuals have broad resemblances in the high proportion of waves of abnormal frequency, particularly those of low frequency.

These considerations might be called *academic* were not research workers confronted with a great scientific challenge, and society with a huge economic burden in the existence of persons with nervous and mental disease. When the fundamental arrhythmia of an epileptic or a schizophrenic patient is the same, it might be hoped that treatment which will help one will help the other. Finding such a specific treatment—a regulator of the rate of the electrical waves of the brain—is a huge and apparently insoluble problem. However, workers have at least an initial encouragement. In their first paper, Gibbs, Davis and Lennox [5] reported that the frequency and pattern of waves, both normal and pathological, could be influenced by physiological changes of the body. These earlier observations have been extended by us.[9] We have compared the frequency of cortical rhythms with the chemistry of the blood passing through the brain and taken from an internal jugular vein. These observations have shown the crucial importance of glucose, of oxygen and of carbon dioxide in altering the frequency of cortical rhythms. Drugs also may influence rhythms so there is definite hope of finding chemicals which will be useful in the various dysrhythmias. The experience of our colleagues, Merritt and Putnam,[16] is important. They find sodium diphenyl hydantoinate (dilantin) is a valuable ally in ameliorating cerebral dysrhythmias if one judges either by the clinical evidence of a decrease in the number and severity of grand mal and psychic seizures, or by decrease of abnormal waves in the

electro-encephalogram. Diphenyl hydantoin has the advantage over phenobarbital that its sedative effect is insignificant. Stupor and bradyrhythmia are associated. The fact that diphenyl hydantoin is often effective in the psychomotor type of seizure, which phenobarbital in large doses may make worse, is an indication of a decided advance and gives hope and inspiration for further work in the field of chemical control of the cerebral dysrhythmias.

SUMMARY.

Available evidence indicates that the electro-encephalograph records the essential activity of the cortex of the brain, and the pattern of wave form is a constitutional characteristic of the individual. Therefore, abnormalities of rhythm may be of more fundamental significance than clinical manifestations.

The three main manifestations of epilepsy (grand mal, petit mal and psychomotor epilepsy) are each accompanied by a distinct pattern of dysrhythmia. The electro-encephalogram record obtained in patients having psychomotor seizures is similar to that seen in most patients diagnosed as having schizophrenia. These records, furthermore, are closely similar to those obtained in the majority of children with psychopathic personalities. Schizophrenia and certain abnormal behavior may, like epilepsy, be spoken of as a form of cerebral dysrhythmia. On the basis of statistical, therapeutic and electrical evidence, we believe that any relationship between epilepsy and schizophrenia is positive rather than negative. We believe that some of the clinical boundary lines which delimit different disorders characterized by recurring psychic or psychomotor symptoms are artificial and are of secondary importance compared with classifications based on physiological pathology.

Both normal and abnormal waves can be influenced by the experimenter. This fact gives hope that chemical means may be found for controlling the abnormal rate regulating mechanism of the cerebral rhythms and thereby curing, or at least ameliorating certain disorders of the brain and mind.

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TREATMENT OF SCHIZOPHRENIA WITH INSULIN SHOCK.*

Personal Experiences and General Review.

By A. H. VANDER VEER, M. D.,
Michael Reese Hospital, Chicago, Ill.,

AND

H. H. REESE, M. D.,
Wisconsin Psychiatric Institute, Madison, Wisc.

The use of insulin in psychiatric practice is not an innovation. From the year after its discovery numerous investigators began to administer this drug to stuporous and uncooperative patients in an endeavor to provoke spontaneous eating by inducing sensations of hunger. Some of these workers employed quite large doses—as high as 60 and 80 units—but all were unanimous in avoiding and condemning even mild degrees of hypoglycemic shock as dangerous. Favorable modifications in the psychosis following mild shocks were observed in several cases, but these leads were not followed up. Then, about 1930, Manfred Sakel of Vienna began using insulin to combat the withdrawal symptoms of morphine addiction in the belief that they were due to sympathetic over-activity. In the course of his experiments he noted profound character changes in some schizoid addicts following insulin reactions, and so was emboldened to attempt the production of repeated hypoglycemic states in cases of schizophrenia. He first reported his results in 1933.[1] In the last two years the method has been extensively employed all over the world and the cases treated run into the thousands.

Method.

A universal system of dosage and management has not yet been developed. The method we have used, which seems to shorten the period of treatment somewhat, employs larger initial doses and more rapid increases than are used by most workers. It is to be

* From the State Hospital for Mental Diseases, Mendota, Wisc.

noted, however, that there is an increasing tendency, even on the part of Sakel, to modify the technique in this direction. We may remark parenthetically that the administration of insulin in divided doses—whereby the patient is given 20 to 30 units at intervals until he falls into coma—is both wasteful and impractical. V. Pap [2] has shown that an individual may still remain conscious after receiving a total of 300 units or more, when given in this way, whereas the same case fell into coma on a single injection of 120 units.

The technique we have employed is as follows: The patient is treated five days a week for a period of eight weeks to three months. Breakfast is omitted on treatment days and the insulin is given by intramuscular injection at 7.00 a. m. The initial dose for all patients, regardless of weight, sex or age is 60 units. We have never seen a patient become comatose on the first day of treatment with this dose, though numerous vasomotor phenomena may appear—sweating, flushing, blanching, etc. On subsequent days the dosage is increased, according to the degree of the patient's reaction, in steps of 5 to 20 units. Eventually an amount is reached which produces deep coma. This is the "initial shock dose" and varies widely from patient to patient. In our experience it has ranged between 70 and 250 units. There is no observable correlation between any constitutional or psychic factors and the size of the initial shock dose. A large man may require a comparatively small amount of insulin, and one slight young woman in this series needed 240 units.

The days immediately following the first coma are the most critical of the entire course of treatment, for the average patient soon displays a sensitivity to insulin requiring rapid lowering of the initial shock dose to about two-thirds of its original value. As treatment progresses, a further gradual reduction is usually necessary, so that one may *eventually* be using a dose of 20 units or less with the consistent production of coma each day. Some cases never manifest this hyper-reactivity but stay on a constant dosage throughout treatment. The recognition and management of insulin sensitivity will be discussed later.

We try so to graduate the insulin dose that the patient becomes comatose about two and one-half to three hours after receiving his injection. Coma is then allowed to continue for some two hours, if no alarming symptoms appear, and is terminated at about noon.

Even if the patient has been in only light shock for most of this time, it is unwise to allow the period of treatment to extend much beyond 12.00 or 1.00 p. m., as undue prolongation of hypoglycemia may occasion difficulty in arousing the patient to full consciousness.

Termination is accomplished by the administration of sugar in one of three ways—by mouth, by nasal tube or by vein. When the first two routes are employed, a concentrated solution of table sugar is used. One likes to supply at least one gram of sugar per unit of insulin, and preferably two; this can usually be accomplished by giving two glasses of saturated sucrose solution. Naturally the oral route is used only in the early days of treatment, before coma has been produced. The nasal tube will be the method of choice for terminating the average comatose shock, and arousal will occur in 15 to 45 minutes. Fifty per cent glucose solution, in amounts of 12 to 30 cc., is injected intravenously when it is desired to wake the patient quickly, to combat some sudden complication, or when the nasal feeding proves ineffective in terminating coma. When the intravenous route is used, the patient usually becomes conscious in two to five minutes. Adrenalin alone is worthless for combating hypoglycemia. Its usefulness, in our experience, is practically limited to the treatment of one complication—difficult arousal—which will be discussed later. It must be emphasized that when intravenous glucose is used it must be supplemented by sugar administered orally as soon as the patient is awake. If this precaution is omitted, coma may recur, as the small amount of glucose injected can neutralize the action of the average insulin dose for only a short time. Whatever method of termination is employed, as soon as the patient is fully awake, he is given a meal rich in carbohydrates. The appetite is generally ravenous and the weight almost invariably increases ten to thirty pounds during an "insulin cure."

If the outcome is going to be successful in any given case, some signs of improvement usually occur within the first three or four weeks. If 30 to 35 deep comas have not favorably modified the patient's status, it is virtually useless to continue treatment.

Clinical Phenomena of the Hypoglycemic State.

The phenomena of hypoglycemia are protean, and vary widely from patient to patient, and even in the same patient from day to

day. Insulin cases therefore require careful and constant supervision, and it takes several months to learn the intricacies of the method. For descriptive purposes one may classify the symptoms of therapeutic insulin shock as (a) autonomic, (b) neurologic and (c) psychic, recognizing that all are dependent on reversible changes in the nervous system, as Schmid [3] has shown by animal experimentation.

(a) To the first group belong such manifestations as sweating, salivation, flushing, blanching, cyanosis, variations in the pulse rate, increased pulse-pressure and pupillary alterations.

(b) Among the neurologic phenomena and signs may be mentioned: grasping-groping reflexes, positive Babinski and confirmatories, changes in tonus, tics, myoclonic and choreiform jactations, generalized myoclonic movements, epileptiform convulsions, extensor spasms of all four extremities suggesting decerebrate rigidity, and tonic neck reflexes. In the very deepest stage of shock complete areflexia is said to occur. We have never seen it and present opinion is solidly against employing shock of such depth.

(c) To a higher level of disintegration belong such disturbances as aphasia, euphoria, psychomotor unrest (which may become very marked), changes in the subjective body schema, visual hallucinations, and the very interesting alterations in perception of time, space, form and color studied especially by Benedek.[4]

The most characteristic early sign of hypoglycemia is a profuse sweat which generally appears within the first hour. The whole bed may be soaked, and individuals often lose one to two pounds during a single treatment. Thereafter, the patient usually becomes euphoric and facetious, and sometimes wildly excited. These symptoms are replaced by weakness, diplopia, dysarthria, ataxia, somnolence and gradually deepening coma. When somnolence becomes marked, the first neurological changes are seen in the form of uni- or bilateral forced grasping. In light coma anomalies of tonus and increased deep reflexes appear, with pyramidal signs which may disappear later in deep coma. Many mannerisms, stereotypies and facial grimaces suggesting schizophrenic automatisms can be observed at different times. Myoclonic movements are frequent. Even if generalized and quite violent, they usually have little effect on the patient's physical condition and may be permitted to continue unchecked. After a time, they generally subside. In deep coma

salivation is usually profuse and may be so pronounced as to constitute a hazard. The body temperature falls from 2 to 6 degrees during deep shock.

Some confusion has arisen in the literature because of the various senses in which the word "coma" has been employed by different authors. Each person employs his own criteria for delimiting this state, and it would therefore clarify clinical description if writers defined their usage of the term. We have classified our patients as comatose when they no longer give evidence of recognizing and understanding the nature of stimuli applied to them—speech, pinprick, threat to touch the eyeball, etc. Such comatose patients may still exhibit purposive, defensive responses of a gross reflectory nature, but the higher cortical centers obviously take no part in these reactions.

European writers, particularly von Angyal,[5-6] stimulated by their current conceptions of the organic nature of schizophrenia, have attempted to delineate various types or syndromes of insulin shock, each attributable to a more or less selective lesion of a particular portion of the cortex. Thus von Angyal describes a frontopolar, a parietal and a parieto-occipital "type" of shock. In the first the frontal lobe and precentral gyrus are thought to be chiefly implicated and the symptomatology is predominantly motor, with forced grasping, motor aphasia, pyramidal signs and changes in reflexes and tonus. In the second syndrome the lesion is considered to be in the forepart of the parietal lobe, and the chief symptoms are organ paresthesias, disturbances in the body schema and sensori-amnestic aphasia. A lesion more posteriorly located is invoked to explain the principal phenomena of the third syndrome: perceptual disturbances in respect to space, movement, form, time and color, and visual hallucinations. We have not identified such clear-cut shock-types in our material, the symptomatology being invariably heterogeneous.

Sakel[7] has called attention to a most interesting manifestation appearing late in treatment which he has called the "activated psychosis." In describing this phenomenon it must first be mentioned that the initial improvement in a patient's behavior or ideas always occurs in immediate relation to hypoglycemia, either just before the onset of coma, or immediately after arousal. In favorable cases

these intervals of clarity and improved contact with the environment gradually increase in length until the patient is lucid for most or all of the day. At this point, when everything is proceeding smoothly, a curious thing sometimes happens: the patient may suddenly become wildly psychotic during shock or immediately afterward, with insight for the episode as soon as termination has been completed (by drinking sugar-water or eating lunch).

Thus, one of our patients who was near the end of her course of treatment, possessed of insight, and without abnormality in her daily behavior or in hypoglycemia, one day suddenly went into wild excitement immediately after intravenous termination, tearing off her clothes, swearing and fighting madly. After eating, she became calm, apologized, and had insight for the psychotic nature of her actions. The same behavior was seen on several successive days, and the patient finally explained that she was experiencing a terrific psychic upheaval in these intervals, with vivid auditory hallucinations concerning her mother. In a few days these periods of excitement ceased to appear and the girl was sent home in complete remission.

Further examples of the activated psychosis will be found in the case histories. The significance of such manifestations is unknown, but it is considered the best policy to continue treatment until they disappear.

Laboratory Investigations.

Extensive biochemical investigations have failed to unearth many significant changes during shock besides the hypoglycemia itself. The blood sugar reaches its lowest point during the precomatose state and shows a slight tendency to rise as coma deepens. The spinal fluid sugar exhibits the same type of curve, with the values usually 5 to 10 mg. higher than the corresponding blood sugar level. Coma is seldom attained unless the venous blood sugar falls below 30 mg.%, and figures below 20 have been common in our experience, the lowest being 14. Occasionally the blood sugar responds paradoxically, by rising instead of falling, and we have seen sugars as high as 400 mg.% during profound coma. The explanation of this anomaly is entirely obscure and it has never been observed two days in succession in the same patient. The blood phosphorus drops considerably during shock and the so-called sympathicotonic blood picture appears. The EKG usually reveals only a lessened amplitude of the T-wave, a change which disappears within a few hours.

Though fatalities have been reported in patients with hyperinsulinism and in diabetics secondary to insulin over-dosage, and although in these cases extensive changes have often been found in the central nervous system,[8] it has been demonstrated by animal experimentation that repeated deep insulin shocks of short duration (such as are used therapeutically) produce only reversible changes practically limited to meningeal hyperemia.[3-8] These facts suggest that cerebral damage due to insulin depends on the duration of hypoglycemia rather than on the depth. Further details of the chemical and metabolic alterations during insulin shock may be found in papers by Gross [9] and Young [10] and in Sakel's monograph.[7]

Complications and Dangers.

The beginner at insulin therapy will encounter many difficulties. Largely as a result of failure to properly regulate the dosage he will frequently have to terminate coma prematurely because of the appearance of one or more of the following symptoms: vomiting, aspiration of saliva, vasomotor collapse, spasm of the glottis, severe hyperpnœa, tachycardia over 140, marked cyanosis, prolonged extensor spasms, severe myoclonic jerks, or an epileptiform convulsion. A few of the more serious complications which can occur during treatment may be mentioned in some detail.

(1) *Aftershock.*—If the carbohydrate intake at and after arousal is inadequate to neutralize the dose of insulin, then a period of secondary hypoglycemia may occur later on, with a second episode of coma. If discovered early, such a circumstance presents little danger but if this delayed shock is allowed to continue, irreversible anatomic changes may occur. An additional hazard lies in the fact that quiet coma may be mistaken for restful sleep. Occasionally aftershock occurs in spite of an adequate carbohydrate intake, so one must always be on the watch for it.

(2) *Insulin Sensitivity.*—Mention has already been made of this phenomenon which usually appears early in treatment. Its recognition is of the utmost importance, for insulin sensitivity causes a dose which has previously been adequate and harmless to have more profound effects than are desirable or safe. The threat lies in the fact that the consequent "relative" insulin over-dosage may make arousal difficult or almost impossible. A number of cases have been

reported where the patient remained in coma or semi-coma for as long as ten days, sometimes with fatal outcome.[2-11] The two cardinal signs of insulin sensitivity are: progressively earlier onset of coma on successive days, and slight degrees of difficult arousal. Whenever coma occurs conspicuously earlier than usual, especially within the second hypoglycemic hour, or whenever there is the slightest difficulty in waking the patient with sugar, the insulin dose should be lowered the following day. If one constantly endeavors to produce coma with smaller and smaller quantities of insulin, the appearance of sensitivity will cause no trouble.

(3) *Difficult Arousal.*—Failure to reduce the insulin dose when sensitivity appears, prolongation of coma for more than three hours, or extension of the hypoglycemic period over more than six hours—any one of these factors may cause the patient to be unresponsive to the usual nasal feeding or intravenous injection of glucose. Such cases of continuing coma tax one's ingenuity greatly. We have found the best remedy to be the administration of sugar by nasal tube in amounts sufficient to fully cover the insulin dose, followed by 1 mg. of adrenalin given intravenously over a period of half an hour. The blood-pressure may rise 80 to 100 mm. during this procedure, respirations are stimulated, absorption from the stomach seems to be improved, and the patient eventually wakes up. Sometimes other stimulants such as caffeine, coramine or metrazol may also be employed to advantage and Freudenberg [12] has recently recommended the intravenous use of vitamines B_1 and B_2 in these conditions.

(4) *Convulsions.*—The commonest variety of convulsion which one encounters during insulin shock is limited to generalized clonic movements without cyanosis. This type of hypermotility in general represents a gradual development from milder, isolated myoclonic twitches. It may be allowed to continue without interruption so long as pulse and color remain good, and usually ceases spontaneously after thirty minutes to one hour. True epileptiform seizures have been rare, occurring in but 2.8 per cent of shocks in our series. In these cases the pulse is generally of poor quality, cyanosis is marked, the onset is abrupt and intravenous termination is indicated. Occasionally an epileptiform fit will appear immediately after termination.

In our experience the most dangerous complication of insulin therapy is status epilepticus developing some hours after arousal and subsequent to an adequate carbohydrate intake. We have encountered this difficulty twice. The sequence of events in these cases is entirely obscure and the most effective form of treatment seems to be powerful barbiturate sedation by the intramuscular administration of sodium amytal. Lumbar puncture can also prove useful at times. The severity and unpredictability of this reaction may be illustrated by a clinical example:

The patient was a male high school student of 18 who had been ill some eight months when treatment was begun. His symptomatology had progressed from worry over masturbation to delusions of venereal infection, feelings of personality change, and auditory hallucinations. The psychosis finally took on a definite catatonic stamp, with refusal of food, mutism, negativism and the assumption of fixed postures for long periods of time. Insulin shock treatment was begun on December 8, 1936. Protamine zinc insulin was used for five weeks, then regular insulin. On most days there was wild excitement in the precomatose phase of hypoglycemia. No complications occurred until the third month of treatment. The first sign of trouble was the occurrence on March 3 of an epileptiform seizure following the termination of a typical deep wet shock. The patient quickly recovered, ate his dinner, and no more heed was paid to the episode. His insulin dose was not changed. On the following day the entire course of shock was normal and the patient ate a large carbohydrate dinner. At 2.30 p. m., nearly three hours after full consciousness had been regained, he suddenly experienced a severe epileptiform convulsion. Six similar episodes occurred within the next three hours despite the gradual administration of 52 grams of glucose by vein and six glasses of sugar water by stomach tube. Hypoglycemia was not responsible for the continuing status epilepticus, as the patient's blood sugar at this time was 127 mg. per cent. At 5.00 p. m. the pulse was 116, rectal temperature 102.2 degrees and the respirations 28. The patient's cardiac action was weak, his general condition was poor, and so much cyanosis was present that oxygen had to be administered. At this point five grains of sodium amytal were injected intramuscularly and no more major seizures occurred until 2.30 a. m. the following morning, when the dose of sodium amytal had to be repeated. No more grand mal convulsions occurred after that but minor seizures involving one or more extremities appeared several times per hour throughout the day, and the patient remained in semi-coma of varying depth. One five-grain dose of sodium amytal was given by mouth at 10.00 a. m. but no other medication. That night the patient slept well and the next morning (March 6) he was normal physically and much improved mentally. The catatonic symptomatology had disappeared. He conversed freely for the first time, ate well, read and bought cigarettes for distribution to the other patients. This dramatic change was of only a few days duration,

however, and therapy was eventually abandoned as useless after two months of further trial, during which the patient slowly regressed to his previous catatonic, semi-stuporous state.

Results.

One might well suppose that the use of a treatment occasioning such marked alterations in the physico-chemical equilibrium of the body would be attended by considerable danger to life. Review of the literature and personal experience does not confirm this assumption, for 1756 cases have been treated throughout the world with but 13 deaths—a gross mortality of 0.74 per cent. American workers have encountered but 5 fatalities, so far as we can learn, in over 750 cases. The figures of most of the foreign authors are given by Wortis,[13] and Parsons [14] has reported the results in the largest single series of cases, that of the New York State Hospital service.

The results have in general confirmed the original figures of Dussik and Sakel,[15] who reported full remissions in 71 per cent and social remissions in 17 per cent of those cases in which the psychosis had not been evident for more than 6 months. Other authors, especially Müller,[16] have achieved almost as good results in cases with a duration up to 18 months. More chronic disorders offer considerably less prospect of success. By "full remission" is understood complete social rehabilitation, return to work, the development of insight and the absence of any abnormality on psychiatric examination.

Interest naturally centers on the selection of the cases most favorable for treatment and on the possibility of predicting the results of therapy in any given case on the basis of the clinical picture. From our experience in the treatment of 48 cases since November, 1936 (see Table I), we believe that we can make the following generalizations:

(1) The best prognosis can be accorded cases with a sudden clearly definable onset, short duration (under one year), and pronounced symptomatology, with hallucinations.

(2) Psychoses with a slow and indefinite onset and with no hallucinations, in which the symptomatology is largely limited to characterological changes, offer a very poor prognosis. Some of these unresponsive cases might well be diagnosed as schizophrenias of the simple type.

TABLE I.

Case.	Sex.	Age.	Duration psychosis.	Injections.	DWS.*	Result.	Type.	Follow-up.
1-EK	F	35	6 years.	32	13	Unimproved.	Simple?	Given 33 metrazol with 25 convulsions; normal later.
2-ML	F	40	2 years.	39	11	Unimproved.	Paranoid.	Given 2 metrazol convulsions; unimproved.
3-CO	M	27	10 months.	32	15	Social.	Paranoid.	Discharged and working.
4-GT	M	25	8 months.	17	0	Social.	Paranoid.	Very good; employed in China.
5-AE	M	19	2 months.	41	21+	Full.	Hebephrenic.	Relapse after 6 months; readmission 31 metrazol—26 convulsions; normal.
6-GB	M	31	3 years.	61	35	Unimproved.	Hebephrenic.	Unimp. after 54 metrazol with 49 convulsions.
7-HA	M	23	5 years.	20	13	Social.	Catatonic.	Working.
8-LB	M	22	1 year?	66	33	Unimproved.	Hebephrenic?	Now working satisfactorily.
9-GS	M	18	8 months.	76	50	Unimproved.	Catatonic.	Unimp. after metrazol. Extract from history in text (episode of status).
10-MH	F	18	3 months.	58	48	Improved.	Catatonic.	Subsequent full remission after 17 metrazol with 8 severe convulsions.
11-CB	F	37	3 years.	36	30	Unimproved.	Paranoid.	
12-CL	M	31	4 months.	45	22	Full.	Paranoid.	Case 1 of text.
13-VB	F	21	2 years.	56	47	Social.	Hebephrenic.	Steadily improving; working.
14-AW	M	23	18 months?	33	21	Unimproved.	Simple?	Case 2 of text.
15-WB	M	25	1 year.	48	31	Full.	Hebephrenic.	
16-CN	M	21	3 months.	40	28+	Full.	Hebephrenic.	Normal.
17-BF	F	30	8 years.	8	5+	Unimproved.	Hebephrenic.	Treatment stopped at request of relatives.
18-EB	F	27	3 months.	36	28	Full.	Catatonic.	
19-SF	F	38	3 years.	33	29	Improved+	Hebephrenic.	Case 3 of text.
20-HC	M	14	9 months	42	35	Unimproved.	?	Diagnosis questionable; may be a depression.
21-HC	F	24	2 years.	33	29	Improved.	Catatonic.	Relapse after 4 months.
22-PB	F	33	4 months.	55	50	Full.	Hebephrenic.	
23-CS	F	23	3 months?	50	33	Full.	Hebephrenic.	3 years of hypochondriacal invalidism, preceding outbreak of acute psychosis.
24-RH	M	21	4 months.	63	47	Improved.	Catatonic.	Full remission after 8 subsequent metrazol injections.
25-EK	F	25	4 years.	60	57	Improved.	Catatonic.	Readmission for second course of insulin therapy.
26-HN	M	31	3 years.	42	33	Unimproved.	Hebephrenic.	Unimp. after metrazol.
27-PM	M	35	5 months.	34	25	Full.	Hebephrenic.	
28-MH	F	27	6 months.	41	28	Unimproved.	Catatonic.	Now 51 metrazol; 41 convulsions; unimproved.
29-SP	F	30	2 years.	32	29	Unimproved.	Manic-schizoid.	Unimp. after previous 16 metrazol, 14 convulsions.
30-EE	F	36	18 months.	39	35	Unimproved.	Hebephrenic.	Now on metrazol.
31-DV	M	20	1 year.	..	..	Full.	Catatonic.	
32-RS	M	37	7 years.	46	39	Full.	Hebephrenic.	Working; parents state normal.
33-LS	F	26	3 years.	72	69	Unimproved.	Hebephrenic.	Now 27 metrazol, 15 convulsions, improved.
34-RZ	F	28	1 year.	..	..	Unimproved.	Manic-schizoid.	Social remission; immediate relapse; retreated—no improvement on previous metrazol therapy.

* DWS—Deep wet (comatose) shock.

(3) Insofar as chronic cases are concerned, those in which the progression has been steadily downhill for two years or more offer little hope for improvement. Where the psychosis has pursued a fluctuating course, however, with a tendency to spontaneous remissions, good results can sometimes be achieved even in cases of several years' standing.

(4) Early paranoid and hebephrenic patients respond at least as well and perhaps better than early catatonic stupors. This fact is especially significant in view of the much larger percentage of spontaneous remissions in the catatonic type and is one of the most cogent proofs that insulin shock therapy does more than merely accelerate a tendency to spontaneous remission.

The following case histories illustrate these remarks. The first patient represents one type of early case under the first category given above, in which one may expect to secure a full remission.

CASE 1.—Male, age 31, a Seventh Day Adventist, with an untainted heredity and negative physical examination. He had left high school in his third year and had done manual labor since. Onset of the psychosis was rather abrupt, in October, 1936, with delusions of poisoning and persecution by a gang of men. In December the patient went to the sheriff and demanded that some action be taken against the "gang." He was thereupon brought to the hospital, where he expressed the idea that someone was planning to carve him up and that a man had put a mark between his eyes. He stated that he smelled poisonous gas and that his food had been doped. He conformed to the admission procedures, but later was excited and required restraint. After a few days residence in the hospital, his behavior underwent a change. He refused food and had to be tube-fed, became semi-mute and sat quietly with closed eyes most of the time.

While the patient was in this semi-stuporous state hypoglycemic therapy was begun February 8, 1937, and was continued until April 22, 1937. Forty-five injections of regular insulin were given, producing deep coma on 22 occasions. The lowest blood sugar recorded was 17 and seven mild myoclonic convulsions occurred. A dose of 160 units was required to put the patient into coma for the first time. Insulin sensitivity quickly set in and the shock dose was eventually reduced to 30 units. On this latter dose deep shock was produced only occasionally. Excitement or foolish behavior were frequent early in shock. The patient would often crawl under the bed or insist on running up and down the hall.

Before beginning treatment the patient was stuporous, semi-mute and tube-fed. He stated that there was "cat hair" in the food, and that he wouldn't eat because this burned his throat. Improvement was gradual, partial insight being evident as early as the seventh day of treatment, when the patient stated, "There never was cat hair in the food. It didn't hurt others to eat it, so it must be okay; maybe the trouble was with me." Much later he explained

that "cat hair" had been his euphemism for poison. The stuporous reaction gradually lessened, and the patient began to help about the ward and to pal around with other inmates. Late in treatment episodes of activated psychosis were numerous. Thus on one occasion the patient ran excitedly into the hall when visitors were present. He later explained his action in these words, "It seemed as if I ought to go out in the hall and say hello to that woman. It seemed as though I had made wrong judgments in the past, and that I was

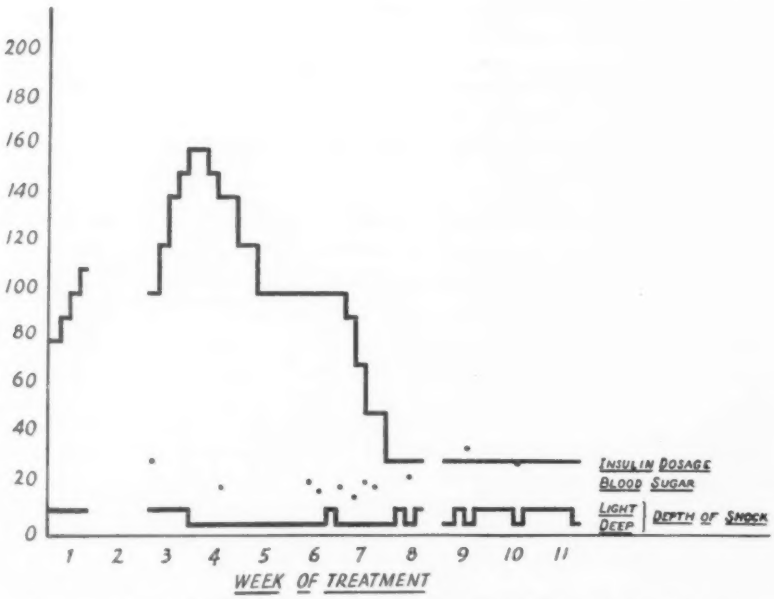


FIG. 1.—Chart of treatment in Case 1 showing variations in insulin dosage, depth of shock and blood sugar readings at termination of the daily coma (between 11.00 a.m. and 12.00 m.). The insulin dosages are to be read on the vertical column of figures at the left, in units, while the blood sugars (indicated by the dots) are to be read on the same column in milligrams per hundred cubic centimeters.

The insulin curve shows a typical early peak, followed by a rapid drop as sensitivity develops, with a further gradual decline in the sixth to eighth week. It will be noted that there is little correlation between the size of the insulin dose and the degree of depression in the blood sugar level, and further, that on the smaller doses of insulin the patient seldom went into deep shock (coma).

doomed unless I could untie the restraints. They were foolish ideas, produced by the insulin. There was nothing to them. There were no voices. I feel this way every day, it seems I have to fight or be lost." On March 26, after a moderately deep shock, the patient again stated, "I had lots of goofy ideas today. They was crazy—just ideas. I thought everybody was puking (one patient had actually vomited) and that they were going to make me eat it.

I thought they were going to make me go to hell. I fought a long time, didn't I? I felt I had to get out of my night-shirt and work from above downward." These activated psychotic episodes gradually disappeared and shock was quiet throughout the last two weeks of treatment.

The patient became extremely friendly as treatment progressed. On discharge insight was almost complete, and he gave a full account of his psychosis. He stated that he had kept his eyes closed while in his stupor because he was afraid of seeing the terrible creatures whose voices he heard constantly. Insight was sufficient to enable the patient to joke about his former psychotic ideas. He stated that at first he thought a few men were after him, but by the time he was hospitalized he had built the gang up to several thousand. He smelled gas, tasted poison in the food and water, and heard devils and people. He is at present at home and is perfectly well.

Diagnosis: schizophrenia—paranoid, with catatonic features.

Result: full remission.

The next patient represents a type of case included in the second category, in which a good result cannot be achieved in spite of, or perhaps because of the relative mildness of the symptomatology.

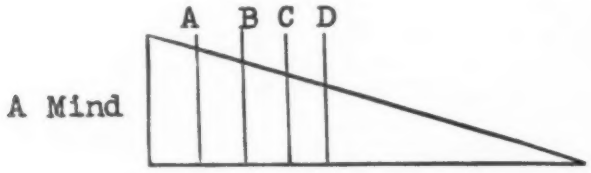
CASE 2.—Male, age 23, who graduated from the University just prior to beginning treatment. His peculiar ideas brought him to the attention of the faculty, who referred him to the psychiatric staff for examination. At this time he presented: inappropriateness of affect, vague ideas of influence, fleeting delusions of being Antichrist, and disorders of association. There were no hallucinations and some insight was present in that the patient recognized that some of his ideas were absurd when viewed by objective standards. He was a voluntary admission, both to the hospital and to treatment. An extract from one of his letters to the psychiatrist will illustrate the symptomatology most aptly.

"In the last several years there has been no state of mind in another that I could not meet or contact; and the less conscious direction on my part the less stilted these contacts.

"Now and then I contact a mind that shoots into mine like the beam of a searchlight which I am invariably able to meet. These contacts (generally from some Roman Catholic priests) though realized only from a glance, are deep, strong and vibrant.

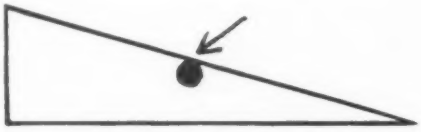
"A month ago while walking through the Capitol, I met two persons going in the opposite direction. There was nothing unusual about the person on the left, but the person on the right was a boy of probably 16 years—he was short and skinny; compared with his body his legs were unusually long, and he leaned to one side; his eyes caused me to think that he was an imbecile (this was observed at a distance of 30 or 40 feet). As he neared, I did not look at him but was thinking of him—when at the moment of passing he quickly glanced up at me and his gaze seared far back into my mind; that fleeting contact was terrific, yet I had a feeling of brotherhood with him. An experience like that causes me to question whether it is

100 per cent ridiculous to think that a foreign spirit may reside in a human being at the expense of the normal development of a person.



"I have found this to work. Suppose that I meet a mind whose consciousness-in-contact can reach back to the 'b' level. Now if I look into such a mind from the 'c' level, there will be no contact established, although this person may sense an odd relationship due to the pull exerted in the 'a' and 'b' levels toward a focus. But if I bring my mind to a focus just a little beyond the 'b' level, I can bring his mind back to come into focus with mine. By this gradual exercise or process I can increase his own discerning power.

"Here's a theory. Suppose there is a patient whose living takes place around one or several ideas:



"That patient is unresponsive to most persons because no contact is established. A book-learned psychiatrist might be able to stumble around the trouble, but with his book-learned treatments deal for the most part stiltedly with the patient. Now if a person could contact the mind of this patient wherever and whatever it is—truly *contact* it, and then slightly modify or enrich his own mind in the desired direction, there would be a pull on this patient's mind; and so with exercise the patient's mind can be decrystallized and directed.

"Would it be wrong to say that next to the ability to contact minds must be the living of love, understanding and strength? One's entire Being must be loving, understanding and strong. That, plus the ability to reach any 'level,' is what I mean by the word 'desuperficialize.'

"Can a person through conscious control maintain a state of mind to serve as an impenetrable barrier between his deeper, more personal self and another? Your and my relationship has been on a superficial plane because of the conscious control exercised by yourself. Only a few times did something inadvertently slip past you to aid in my moving in the direction of understanding your deeper self. Being very suggestible and inexperienced I

was held to react to your conscious-set; but if my or anyone's mind could have swung to a 'b' or 'c' level, I know that this barrier would have become ineffectual.

"If you regarded me as subject to 'incipient' schizophrenia, why didn't you see into my mind and contact that supposed second self and then guide it to full expression that you might examine it? Trying to get me to talk about it was certainly a distant, plodding, superficial way of maneuvering. It is a cautious way if one is uncertain of the range and strength of one's Being."

Shock therapy with regular insulin was administered from February 8, 1937, to April 1, 1937. Thirty-three injections were given and deep coma averaging two hours in length was attained on 21 occasions. Moderately severe myoclonic convulsions appeared twice. The lowest blood sugar reached was 27 with a simultaneous spinal fluid sugar of 36. Extensor spasms occurred regularly and tonic neck reflexes were elicited once. Recovery from shock was always prolonged, with very slow return of speech. A moderate degree of insulin sensitivity gradually became manifest, requiring a reduction of the shock dose from a maximum of 110 units to 60 units. Treatment was discontinued because no modification whatever was being effected in the patient's ideas of influence. On final review it appears that the psychosis may have been of considerable duration as the patient's school work had been growing slowly worse for the past two years, and he himself dates the onset of his peculiar experiences to several years ago. Physical status was normal.

Diagnosis: schizophrenia, unclassified as to type (simple?).

Result: no improvement.

The patient was discharged from the hospital following his unsuccessful course of treatment, and is doing well at home playing chess and working at manual labor.

The next case is illustrative of the results which may sometimes be secured in psychoses of long duration exhibiting a tendency to spontaneous remission.

CASE 3.—White, married woman, 36 years old. Education: one year university. The onset of the psychosis was gradual and occurred some time in 1933. The patient spent the early months of 1934 in a private hospital but recovered sufficiently to stay at home and care for her household and her child until March, 1935, when admission to Mendota State Hospital became necessary because of destructive tendencies and attempts at suicide.

On admission physical examination was negative except for the scars of an old radical mastectomy on the right side. The patient was very dreamy and thoughtless, often giving irrelevant answers to questions. She readily admitted hearing voices both male and female saying "keep it." She also had visions of her little boy. At times she had the feeling that people could read her mind and steal her thoughts. Her condition slowly improved and she was discharged in November, 1935.

She remained at home until April, 1937, when admission again became necessary because of her threats against the housekeeper, whom she accused of misconduct with her husband. On examination she was quiet and inactive, noticeably retarded mentally and physically. Her answers were vague, brief and uncertain. She was able to give very little information about herself or the reasons for her hospitalization and took little interest in her environment. A few facial grimaces were noted and the patient's general appearance was dilapidated and untidy. She stated that the voices were not saying anything any longer but that they had kept her awake for the past month, whining in her ear. She could not understand what they said. She stated that she was unable to tell whether women watched her because she was asleep most of the time. She did not know whether or not she could read other people's minds. The emotional tone was very flat.

Treatment was begun April 6, 1937, and discontinued May 21, 1937. Thirty-three doses of insulin were given with the production of deep wet shock on 29 occasions. Gradual reduction in the shock dose from 90 to 35 units became possible as insulin sensitivity developed. Two blood sugar values of 18 were recorded. Only one complication occurred during treatment: an episode of difficult arousal in the course of which an epileptiform fit occurred.

Before treatment was started the patient was in a dreamy, semi-stuporous condition, unable to give any information about herself. Considerable improvement was noted after two weeks, and after a month she was permitted home over week-ends. Activated psychotic manifestations occurred once, when the patient imagined her little boy was to be tube-fed. This idea disappeared as soon as food was taken. As improvement progressed the patient became more and more anxious to return home, and finally persuaded her husband to effect her discharge against the physician's advice. On discharge the patient made a fairly good impression. She was friendly, cooperative and without hallucinations, but completely lacking in insight. She was also quarrelsome, especially toward her husband. A relapse is very likely to occur.

Despite the rather poor impression which the patient made on discharge she has been at home since May, 1937, and is reported to be adjusting well and managing her own household.

Diagnosis: schizophrenia, hebephrenic type.

Result: improved.

Little is known as yet with respect to the permanency of the remissions and nothing at all as to the mechanism of improvement. Eight of the first ten paranoid patients in the Vienna series have been well and at work for more than three years.[17] In the present series of cases, 34 patients completed treatment; of these 16 were ultimately sent home in good or complete remissions. Two of these patients relapsed after remissions lasting six months and four

months, respectively. They are now under treatment with metrazol. All the other recovered patients are doing well at home or at work and the condition of several has improved quite definitely since discharge. The results as summarized in Table II illustrate the decisive importance of the duration of the psychosis for the outcome of treatment. One full remission was obtained in the group of chronic patients (where the psychosis had been evident for a year or longer), and the two social remissions in this group both

TABLE II.

Cases Under Treatment..... 14
Cases Completed Treatment..... 34

Duration of psychosis.	Full remissions.	Social remissions.	Improved.	Unimproved.	Total.
Under 1 year.....	9*	2	2**	5	18
Over 1 year.....	1	2	3*	10	16

This table illustrates the status of our completed cases at the time of their discharge from therapy. All the full and social remissions were sent home. Of the patients listed as "improved," two subsequently achieved full remissions under metrazol therapy, and all but one of the cases in this group were ultimately sent home. Of the patients discharged from treatment unimproved, none have shown any tendency to spontaneous recovery, and all but two are still in the institution. The two unimproved patients who were discharged (Cases 8 and 14) are doing well at home without any change in the clinical picture. The two relapses in the series (one each from the groups marked *) are being retreated with metrazol and are both improving. The two "improved" patients who ultimately became full remissions with metrazol were both in the group marked **.

The decisive significance of the duration of the psychosis for the outcome of treatment is quite evident.

had experienced spontaneous remissions on previous occasions. On the other hand, 70 per cent of the more acute cases with a duration between two months and one year were sent home, most of them being full remissions. These results are in fairly close accord with those reported in the three largest series—those of Dussik and Sakel,[15] Müller,[16] and St. Witek,[18] with the exception that these more experienced workers were able to obtain somewhat better results in their chronic material.

Unfortunately, no exact comparison is possible with figures for spontaneous remissions in schizophrenia, as the numerous reports

dealing with this question vary so widely in their conclusions. However, even the most extravagant estimates for spontaneous remissions in acute cases (such as would roughly correspond to our first group of patients), do not exceed 35 per cent, and many authors place the figure as low as 15 or 20 per cent. It seems fair to conclude, therefore, that insulin shock therapy increases the percentage of remissions in recent cases at least twofold and probably more. The quality of the individual remissions, moreover, particularly with respect to insight, is so superior to that of the average spontaneous remission as to constitute one of the most salient proofs of the worth of the treatment. Years must elapse, however, before an accurate statistical evaluation of the results of insulin therapy can be made.

Conclusions.

1. Remissions of good quality can be obtained in 70 per cent of acute schizophrenias, if insulin shock therapy is instituted within one year of onset.

2. This figure is at least double that for spontaneous remissions.

3. The best response is secured with hebephrenic and paranoid cases exhibiting an acute onset, marked symptomatology and hallucinations.

4. Schizophrenias of insidious onset without hallucinations, and psychoses of mixed type usually respond poorly.

5. In general, chronic patients cannot be benefited unless they have had previous spontaneous remissions.

6. By careful regulation of the insulin dose, complications can be reduced to a minimum.

Summary.

Results of insulin shock therapy in a series of schizophrenic patients are described, together with the chief complications encountered and their treatment. The variegated clinical symptomatology during treatment is discussed with particular reference to attempts at delimiting different types of shock. The prognosis in individual cases is shown to be related to the type of psychosis and to the duration of symptoms.

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INSULIN * TREATMENT OF PSYCHOSES.

Suggested Mechanism.

By EUGENE ZISKIND, M. D.,†
AND
ESTHER SOMERFELD-ZISKIND, M. D.,
Los Angeles

Of the various theories advanced to explain the results of insulin treatment in schizophrenia, it appears most logical to us to investigate first the possibility that the favorable effects are due to the insulin itself. We determined to check this question, since many of the dangers and much of the expense of treatment would be eliminated if hypoglycemic shock were not essential.[1] This is particularly pertinent since the rôle of insulin in oxidation (carbohydrate combustion) in the peripheral tissues is the primary one, with hypoglycemia secondary and probably entirely independent of it. The possibility exists that the favorable effects of insulin shock then may be due to this primary oxidation effect. The simultaneous administration of insulin plus glucose eliminates the hypoglycemia and permits the utilization of the oxidation effect in isolated fashion. Of course insulin and glucose have been used before, but the results were favorable in only a few instances. It is to be emphasized that the dosage of insulin was less and the duration of the treatment shorter than in Sakel's method.[2] May the difference in results be due to the amount of insulin?

Apropos of the foregoing, it was our good fortune to contact through Dr. Robert L. Stern a patient who presented a set-up favorable to the answer to the problem. She had arteriosclerotic dementia of profound degree. Over a period of seven years she had become slowly but progressively worse. If insulin buffered with carbohydrate would improve her mental state, could that fact be accepted as evidence of an organic effect of insulin on the brain apart from hypoglycemia? And if so, might it not throw some

* We are indebted to Eli Lilly and Company for part of the insulin used in these cases.

† University of Southern California School of Medicine.

light on the action of insulin in the treatment of the other psychoses; notably schizophrenia? The report of our results with this patient follows.

CASE I.*—*Female, aged 60, with arteriosclerotic dementia, showing profound emaciation, bed sore, pellagrous-like lesions on hands and feet, marked degree of hyperactivity with destructive tendencies, soiling, and reduction of speech to two or three stereotyped phrases. Treatment with large doses of insulin buffered by diet, resulting in marked improvement in both the physical condition and mental state.*

Onset of Present Illness.—The patient, aged 60, was first seen July 20, 1932, with the presenting complaint of impaired memory for one year. She had been well up to five or six years previously, since which time the family had noted a change in disposition. There had been financial reverses and the patient worried over them. She became sensitive and at times would go into a rage. Family quarrels in regard to in-laws became more disturbing than usual. In the last two years the patient frequently appeared to be "in a state of abstraction." The loss of memory was chiefly for recent events, remote memory being well retained. A history of gradually rising blood pressure was given; in 1931 the systolic pressure had been 160 mm. Hg., but by 1932 it had gone up to 190 mm. Hg.

Systemic inquiry revealed that for two or three years there had been attacks of dizziness of one or two minutes duration with sudden falling at times. Probably the patient had momentary impairment of consciousness but without convulsive movements. Edema of the ankles had been present for years, but not as often of late. Palpitation, worry, sensitivity to crowds and ready tears were other symptoms. The body weight was stationary at 170 pounds.

Past History.—The past history included a convulsion at one year with subsequent diplopia; severe typhoid fever at four years with confinement to bed for a year, and again at 16; whooping cough; Cæsarian section with last child 15 years previously; cervical repair eight years ago; a fall from the Mississippi levee five years ago with injury to the trapezius, and a fracture of the clavicle three years ago. Medical studies performed in 1924, because of uterine bleeding from a cervical erosion, revealed a slightly enlarged heart and small pulse pressure. In the family history, the mother, father and maternal aunt were affected with diabetes. Two paternal cousins and a paternal uncle had psychoses; two of them committed suicide.

Physical Findings.—The only positive physical findings in 1932 were: many dental repairs, a mild degree of cervical adenopathy, obesity, blood pressure 180/120. The heart sounds were regular. The neurologic examination was entirely negative, except for diminution in hearing through bone conduction with a C 512 tuning fork; tremor of the tongue; mild but definite signs of arteriosclerosis in the optic disks, and inability to secure deep reflexes

* Reported before the Los Angeles Neurological Society, February 24, 1938.

in the lower extremities. The diagnosis was organic deterioration probably due to cerebral arteriosclerosis.

Subsequent Course.—Since that time the patient had undergone progressive deterioration. In the interim several other neuropsychiatrists had verified the diagnosis, with hopeless prognosis. The patient was not seen by us between 1932 and December, 1937, the interim history being supplied by records from other physicians. The memory defect became progressively worse so that the patient would get lost about the house; she would turn on the gas and walk off. In April, 1935, the patient showed impairment of remote memory with confabulation, she could not recall the capital of Michigan (her birth state), could not multiply 6×7 or 8×8 and was not entirely sure that 3×2 was 6, though she suggested this number. She identified pictures with great difficulty. Periodically the patient was hyperactive and restless; she might walk around the house all day holding on tenaciously to her bedding. At times pressure activity and insomnia could not be controlled with very heavy sedation. November 25, 1935, the patient had a cardiac attack which was diagnosed acute left ventricular failure incident to arteriosclerotic heart disease and pre-existing hypertension with cardiac hypertrophy. Since then the patient has received an average daily dose of $1\frac{1}{2}$ grains of digitalis. There have been three or four other acute episodes with pulmonary congestion in the past year. After one of these attacks the patient's blood pressure was 260/120 and there was gallop rhythm. The heart attacks have always responded to therapy consisting of venesection, morphine, oxygen and metrazol.

Deterioration was progressive. By July, 1937, the patient was extremely restless and very destructive. She had a voracious appetite, was untidy at meals, soiled herself, and began to lose ground physically. In September, 1937, she developed pellagrous lesions on the hands and feet. Squibb's Vitamin B and G syrup, 1 dram 4 times daily, was taken for the next $3\frac{1}{2}$ months. Sedation was attempted by moderate amounts for bromides or barbiturates. The skin lesions cleared within two weeks, but then reappeared in November. The patient lost in weight progressively from 156 down to 122 pounds. (She is tall, 5 feet, $5\frac{1}{2}$ inches.)

Present Status.—When seen on December 18, 1937, the patient was markedly emaciated so that the skin hung in folds from the bones. There was pellagrous-like lesions on the hands and feet that had not responded to vitamin therapy, and small decubitis ulcers on both buttocks. The skin was dry and had a pronounced, peculiar, musty odor. The patient was incessantly active, pacing back and forth, trying to open doors or pawing at the windows. She was resistive and it was almost impossible to keep her in bed or clothed. She was destructive, tore her clothes and soiled the floor. It was difficult to get her to eat. Speech was almost lacking and the only phrases heard were "Where's pa?" "Where's Joe?" monotonously and persistently repeated even when these relatives were holding her hand.

Cardio-Vascular Findings.—The physical findings in regard to the circulatory system call for special comment. The heart rate was 74 and regular; the blood pressure 110/80. The apex beat was visible almost to the anterior

axillary line in the fifth interspace. No thrill was palpable. The area of cardiac dulness extended in the fifth interspace to the anterior axillary line on the left and in the fourth interspace about 2 cm. to the right of the sternum. The area of aortic dulness was normal. There were no murmurs and A_2 was accentuated. The skin of the hands was inelastic and the brachial vessels were tortuous. The retinal arteries showed definite sclerosis of moderate degree. The liver edge, smooth and not tender, was palpable 2 to 3 cm. below the costal margin in the mid-clavicular line. There were a few fine rales in the bases of both lungs, but these were inconstant. There was no swelling of the ankles

Laboratory Findings.—Laboratory tests at this time showed a normal urinalysis, blood count, and blood Wassermann. The non-protein nitrogen was 54 mg. per cent (December 18, 1937) and 34 mg. (January 7, 1938). The spinal fluid showed an initial pressure of 100 mm., was clear, with quantitative protein 30 mg. per cent, negative Wassermann test and colloidal gold curve 0001110000. The fasting blood sugar was 120 mg., blood cholesterol (January 6) 312 mg., (January 29) 277 mg., and (February 12) 278 mg. per cent. Postero-anterior radiograph of the chest taken at six feet showed the heart enormously dilated and hypertrophied to the left, but no other abnormalities. The electrocardiogram (patient taking digitalis) showed a left ventricular preponderance and an inverted T-wave in lead I.

Treatment.—The patient was considered to be in a very critical state and only the persistent desire of the family to have something done and our desire to put to the test the ideas expressed in the introduction to this paper led us to treat her with insulin. The patient's son, a physician, realized the risks and so fortified, we prescribed insulin in single daily dosage of 10 units and increased the dose by 10 units daily until 140 units was reached, accompanied by frequent small feedings. At this point the patient developed mild hypoglycemic reactions, *e. g.*, pallor, and coldness associated with profuse perspiration. The insulin was then reduced to 120 units and has been maintained at this level to the present time.

Results.—The results with this treatment were quite striking. The patient gained in weight from 122 pounds to 155 pounds; at first at the rate of one pound a day. The pellagrous lesions disappeared rapidly as did the bed sore. The patient was no longer hyperactive, she could tolerate her clothes, ate well and was quite congenial. She laughed frequently in an exaggerated fashion. Her mental state, though far from normal, has undergone progressive improvement. At first it was noted that the patient groped for words or would speak part of a sentence and then pause apparently for failure to recall a word. Finally it was noted that she spoke some complete relevant sentences. She even related an anecdote about her son in childhood and referred to his baby talk. Much of her speech still consists of simple perseverations in the forms of phases or such stereotyped statements as "It's wonderful." The improvement has been progressive to date and may be characterized as having been greatest in the state of general nutrition, next best in behavior of the patient and finally, least, but still very definite, in the intellectual

functions. This is striking since in the seven years of illness prior to this treatment the patient's course was persistently and continuously downhill.

CASE II.—*Twenty-six-year-old female suffering with ulcerative colitis 8 years, narcotic "addiction" 7 months, and hypomanic state with delusions of persecution, extreme emaciation, constipation and abdominal cramps. Treatment with insulin and frequent feedings. Disappearance of need for narcotics and of mental symptoms, marked gain in weight, pronounced amelioration of gastro-intestinal condition.*

Onset of Present Illness.—This patient was seen in consultation with Dr. Hans Schiff, January 19, 1938, because of the problem of morphine addiction. Although the patient had suffered with ulcerative colitis 8 years ago, she had an interval of slightly more than 2 years when she was markedly improved after an ileostomy performed in 1933. She became ill again 10 months ago after the clinical recognition of a carcinoma of the liver in her mother. The patient had had diarrhea with blood and mucus, but when we saw her, constipation and severe abdominal griping were the chief intestinal symptoms. Examination by a proctologist had revealed ulceration of the sigmoid and rectum. The patient's weight had decreased from 135 pounds to something below 71 pounds; the latter was her weight when she improved enough to stand on the scales. She had received increasingly larger doses of codeine for pain, so that she was taking 18 grains a day in November, 1937. She was then transferred to a compound of hyoscin 1/100 grain, morphine 1/4 grain and cactoid 1/60 grain (H.M.C. No. 1), and was soon taking from 4 to 6 per night. The patient could tolerate her pains during the day with milder sedatives and antispasmodics, but insisted that she have narcotics at night to rest. Since there were no withdrawal symptoms in the day time, one could hardly consider the patient a morphine addict. Attempts to reduce her sedation were unsuccessful, hence the consultation with the neuropsychiatrist.

Systemic inquiry revealed no further pertinent data except that menses had been absent for one year, but at the time of each month when the catamenia should have come, the patient had an increase in her gastro-intestinal symptoms and presented mental abnormalities. She was said to be at this stage of her ovarian cycle at the time of the consultation.

Past History.—The past illnesses included measles in childhood, influenza 1918 and 1929, dry pleurisy 1931, ileostomy December, 1933, ileosigmoidostomy July, 1934, and tonsillectomy 1935. Her first period of illness with ulcerative colitis calls for more description. Its onset was eight years ago when she was engaged to a young man of whom her mother did not approve. Because of the latter's disapproval, the patient gave up her betrothed. The intestinal symptoms persisted for three years during which she went progressively downhill although treated by numerous outstanding physicians in Los Angeles. In the third year she was taking large doses of opium. She then took a trip to consult Dr. Bassler in New York City, where ileostomy was performed a few hours after the patient arrived. She is said to have been as

emaciated then as when we saw her. She was psychotic at the time, with delusions of persecution (my "Hitler complex," as she expressed it) and visual hallucinations (she saw Hitler sitting down in the corner of her room). The delusional state lasted 5 weeks. The patient improved progressively in weight, gaining from 65 to 135 pounds in five months. The gastrointestinal symptoms improved markedly but did not disappear entirely.

The family history was unimportant; there were no mental illnesses.

Personal History.—The personal history revealed no known abnormalities of birth or early development. The patient is described by her brother as "always thin, nervous and finicky about eating, though not sickly." She bit her nails for a period during adolescence, but no other neurotic stigmata were recorded. The patient had adequate play life. She attended school through the first year of university and was well adjusted as an average student. After leaving school she did not work, since she was not considered very strong and the family did not need financial aid. The sexual history is not significant except for the broken engagement noted. The patient is an active, outgoing type, a leader in organizations, vivacious, cheerful in disposition and popular. She is finicky about eating and meticulous as to details and cleanliness. She is described as always having been talkative.

Physical Findings.—When we first saw the patient she was lying in bed, with legs markedly flexed on the abdomen, alternately laughing and crying, overly talkative, at times speaking to herself, at times rambling and incoherent and again engaging in relevant and intelligible conversation. She was profoundly emaciated so that the bony markings were clearly visible beneath the skin. She was disheveled in appearance and cooperative only at times. The temperature was normal, the pulse usually between 120 and 100, though at times as high as 140, and the respirations from 20 to 24 a minute. There were acne of the face and small palpable anterior cervical lymph glands. The patient was of asthenic habitus. The blood pressure was 140/76; heart and lungs were negative. The abdomen was scaphoid and showed 3 operative scars but no other abnormalities. There were no pellagrous skin lesions.

Laboratory Findings.—Laboratory tests included a normal urinalysis except for a slight amount of albumen, a blood count of 5,070,000 red blood cells, hemoglobin 95 per cent, color index 0.94, and 7800 white blood cells with a normal differential count, blood Wassermann negative and blood sugar of 85 mg. A previous barium enema revealed "the colon rather low in the pelvis and showing much intolerance to barium throughout most of its extent . . . . , the flexures were separable . . . . , no other filling defects . . . . , findings are those of ulcerative colitis."

Mental Status.—The mental status showed the behavior noted above. The patient's speech was under pressure, she showed flight of ideas and was readily distractible. The mood was very labile between crying and depression and a definite euphoria. "What are your spirits?" "Very gay when well, (laughs) and as a patient have been considered by Dr. F. (laughs) you can put that down, but don't have to, (laughs) he's an Irishman (laughs) he was gay, he was so big he wouldn't consider a consultation and all he would

do was give me dope, dope, dope." (Laughs.) There were no delusions at this examination, though the patient was eating poorly and when moved to the hospital showed definite persecutory ideas. She feared that her food was being poisoned and would not eat anything except oranges which were opened in her presence. During the night she was at times confused, disoriented and on one or two occasions had mild visual hallucinations, during which time she "saw people in the room who wanted her to die." At such times the patient (who is not religious) called for a rabbi, read the Bible and repeated the Lord's prayer. In the day time she was not disoriented and the sensorium tests were adequately carried out except for occasional difficulties to be attributed to defective attentiveness. There was no insight for the delusions and hallucinations at the time of their occurrence, but after a few days the patient referred to them as her "poison complex."

Diagnosis.—The diagnosis made was ulcerative colitis with psychosis, the latter thought to be in part toxic from excessive medication and in part due to the dietary deficiency, even though pellagrous skin lesions were absent.

Treatment.—It was decided to place the patient on insulin therapy plus frequent feedings for the following reasons. Although this was not a case of true morphine addiction, the use of insulin as suggested by Sakel for this condition first called it to mind. The marked emaciation was a definite indication for any measure which would build up the general nutrition. Finally, we were presumptuous enough to suggest that, if some of the colitis symptoms were due to sympathetic nervous system impulses, the insulin as a vagatonic stimulant might be of value in this connection also. We had already noted a happy response in our first case and were particularly anxious to observe the effect on this patient.

The patient was placed on 10 units of insulin daily and the dose increased by 10 units each day. Because she refused to eat during the first few days she had some severe hypoglycemic reactions (two convulsions), but after that no reactions to speak of were observed. She has become stabilized on a daily dose of insulin between 100 and 120 units, with hourly feedings for six consecutive hours.

The therapeutic results were very gratifying. Within five days the ideas of persecution completely disappeared and the patient subsequently referred to them as her "screwy ideas." The speech remained under pressure for a longer period of time and the dominant mood was one of elation and some degree of jocosity. The patient's appetite improved and she gained on the average of a pound a day from 71 pounds (her weight after the sixth day of treatment) to 100 pounds. Her present weight (March 18) is 111 pounds. Of considerable interest is the fact that the griping pains have practically disappeared and the patient no longer requires any sedative medication for this purpose. She still has some insomnia and receives three grains of sodium amytal every night. The bowel movements are well formed by morning and the patient thinks they would be in the early part of the day too, at which time they are loose, if she did not imbibe as much orange juice (1000 c. c.) as she does. Smaller amounts of orange juice fail to keep her free from hypoglycemic symptoms.

The most profound response has been in the state of general nutrition. However, the effect on the mental symptoms was equally striking and the amelioration of the intestinal symptoms was a gratifying surprise.

Discussion.

Our primary interest in these cases was whether or not interpretations might be made available to explain the mechanism of insulin therapy in schizophrenic psychoses. If it can be demonstrated that insulin ameliorates pathologic states due to cerebral malnutrition, presumably such as occurs in arteriosclerotic deterioration, can one conclude that improvement of cerebral metabolism is at least one of the favorable functions of insulin therapy? Our two cases must be examined critically in respect to this consideration.

The question of diagnosis in both cases is one of considerable importance. Perhaps an avitaminosis or pellagra was the basic factor in the production of psychotic symptoms. If so, then we are confronted with the possibility that this type of insulin therapy as a matter of forced feeding improved the general nutrition and along with it that of the brain; a result secondary to the general effect and not due to specific effects on local brain metabolism. Even this is quite striking, and should our thesis of a more limited cerebral effect prove to be untenable in the light of further observations, this therapy if successful in other cases of avitaminosis or pellagra would represent a definite contribution to the management of these conditions.

The diagnosis of an organic deterioration in the first case is unquestioned. The more exact diagnosis lies between Alzheimer's disease, Pick's lobar atrophy, and arteriosclerotic deterioration. In favor of the last diagnosis is the history of mild cardiovascular disease as far back as 1924 indicated by transient ankle edema, the syncopal attacks and rising hypertension when the patient was first seen in 1932, the subsequent attacks of acute cardiac failure with the diagnosis of enlarged arteriosclerotic heart, and the present signs of retinal arteriosclerosis, inelasticity of the skin and tortuosity and hardness of the brachial arteries. In view of the fact that the patient ate poorly and developed pellagrous lesions, a superimposed avitaminotic element in the last period of her illness prior to treatment cannot be denied and indeed seems probable.

The diagnosis in the second case is fairly definitely one of psychosis due to drugs and food deficiency. The response to treatment in both cases, however, is so much more rapid than any that we have previously witnessed for pellagra that we question whether it is merely a generalized nutritional effect, though it may be. This matter is being checked in two patients with organic deterioration who are not malnourished. The impression gained therefore from these two patients (one with mental symptoms of definite cerebral malnutrition, and the other with symptoms probably of similar deficiency) is that the improvement can be ascribed to an enhanced cerebral metabolism induced by the insulin.

It is well in this connection to point out that increased general nutrition, *e. g.*, gain in weight, is not always accompanied in schizophrenics with improvement in the mental condition. Furthermore, since the brain does not store carbohydrate, it is very much dependent on the glucose and lactic acid in the blood stream for its nutrition. It is this lack of carbohydrate storage that explains why cerebral symptoms are among the earliest in hypoglycemic states. Since insulin is intimately associated with the utilization of carbohydrate in the peripheral tissues, it is not far fetched to assume that an organ which is so dependent on carbohydrate fluctuations will profit by any measure which will enhance local oxidation of sugars.* Should this effect of insulin on cerebral metabolism be established, it would offer thereapeutic potentialities for many psychiatric and neurologic entities. The problem as applied to schizophrenia will probably be best approached by the treatment of cases by insulin plus frequent feedings compared with controls (schizophrenic cases) treated with insulin shock. This is now being carried out.

The effect on general nutrition was so pronounced that it calls for special comment. Increased utilization of carbohydrate and fat deposition are at least two of the responsible factors. It may be that the method of treatment we have used is more efficacious in forced overfeeding than the previous treatment with insulin for this purpose. Since we originally intended to test out the non-shock aspects of Sakel's treatment, we duplicated his technic of using large single doses of insulin and then added hourly

* Utilization of carbohydrates by the brain may take place in the absence of insulin.

feedings for a period of six hours. This procedure differs from earlier ones in the use of larger single doses of insulin. Previous treatments utilized, as a rule, small doses of insulin twice a day, rarely averaging more than 40 units at a dose and usually much less. We plan on raising the insulin to about 160 units. Giving the insulin in one dose in the morning has removed to a large extent the danger of late hypoglycemic reactions during sleep at night. Possibly also there may be an advantage in having a free interval in each day during which the patient is thrown back on his own insulin-producing mechanism. In any case it seems possible to us that this procedure may offer greater success in forced feeding than previously employed methods.

The successful response in the colitis symptoms noted in the second case raises the question as to whether the results were accidental or incidental to the treatment. It is important to point out that the colitis is as yet not cured, even though the symptoms are markedly ameliorated. The further course in the patient will be significant. On the other hand, the striking remission warrants trial with this therapy in other cases. Should the therapy be of value in this illness, it will open up the question of its merit in many and varied pathologic states.

Summary and Conclusions.

1. Two profoundly ill patients, one with arteriosclerotic dementia and another with ulcerative colitis and psychosis showed a remarkable response to treatment with large amounts of insulin and frequent feedings.

2. It is suggested that the results are at least in part due to an improved cerebral metabolism.

3. It is further suggested that this may be the mechanism or one of the mechanisms in the insulin shock treatment of schizophrenia.

4. Sakel's treatment plus frequent feedings is being tried on a group of schizophrenics and compared with a group treated with insulin shock.

5. The large single dose of insulin, such as is used in shock therapy, buffered, however with frequent feedings, may be more efficacious than the earlier therapy of forced feeding with repeated small doses of insulin.

6. The results obtained in our two cases, although tentative pending their confirmation in subsequent cases, warrant the trial of the suggested therapy in the same and many other pathologic states in which the enunciated principles apply.

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METRAZOL TREATMENT IN SCHIZOPHRENIA.*

A Study of Thirty-Five Cases in Private Practice, Complications and Their Prevention.

By N. W. WINKELMAN, M. D., Philadelphia.

Since November, 1934, when Sakel first reported the effect of severe and repeated hypoglycemic shock on schizophrenic patients, great interest has been aroused in this method of therapy. Up to that time only sporadic therapeutic attacks against this disease had been made. In this country in particular, Cotton *et al*[1] of Trenton State Hospital had tried to improve their cases of schizophrenia by elimination of foci of infection, including tonsils and teeth and even by such a radical procedure as colectomy. Psychiatrists had known for a long time that any severe illness in a schizophrenic patient may act as a means of temporarily relieving him of his mental condition. Since the work of Loevenhart, Lorenz and Waters[2] it had been known that the inhalation of a mixture of 40 per cent carbon dioxide and 60 per cent oxygen had the effect of rousing patients from a catatonic like stupor, so that they gained normal or almost normal contact with their environment. A similar result was also obtained by the intravenous injection of sodium amytal. The experiments were repeated and confirmed by Solomon, Kaufman and D'Elseaux.[3] The cases done by these authors showed that after a patient inhaled the gaseous mixture for two or three minutes "she became quite normal in her responses and activity. She talked freely, coherently and intelligently." During the breathing of the gaseous mixture there occurred very promptly marked increase in the depth but not in the rate of respiratory movements. The face became suffused and red. There was loss of consciousness, pupils dilated widely and in some instances movements of the periocular muscles of convulsive or tetanic-like form occurred. Occasionally a more

* Read before the American Neurological Association, Atlantic City, May 2, 1938.

University of Pennsylvania, Graduate School of Medicine.

general convulsive picture was observed. The period of lucidity averaged from 15 to 25 minutes. The patient again became startled, amazed and a confused expression came over the face. It is interesting to note that in the course of a few minutes on repeated treatments by this method the patient showed definite improvement. It was the experience of these authors that patients with long-standing schizophrenia showed less response to the gaseous mixture than patients ill shorter periods of time. In long-standing schizophrenic patients the authors felt that they reacted to the full capacity of their cerebral process at the time. These authors believed that the work of Loevenhart, Lorenz and Waters [2] was "completely convincing," that it was possible to change the mental activity and conduct of catatonic patients very promptly. They felt that it was done upon a physiologic level and a change in the physiology of the brain was induced by these methods. They assumed that originally a "psychic problem led to a disorder in the physiology." An analogy is given by these authors which is extremely interesting. It is accepted that the symptoms of hyperthyroidism may follow some intensely emotional experience but after the thyroid gland has reached the stage of hyperfunctioning the further results are due to metabolic changes. They found a very great increase in spinal fluid pressure during the inhalation of the gaseous mixture; in one instance reaching 600 mm. of water. This is interesting in view of the mechanism of convulsions in insulin hypoglycemia as found by Drabkin and Ravdin.[4] They also found that in severe hypoglycemia with anhydremia there was a rise of cerebrospinal fluid pressure to a critical level and the production of convulsions. Hypoglycemia alone did not cause convulsions.

The literature on the insulin-shock therapy of Sakel has been extensive. The treatment requires hospitalization and nursing of the highest type. Physicians must be in constant attendance. It may be necessary to terminate the hypoglycemic state in very short order. Intravenous injections of glucose and subcutaneous injections of adrenalin chloride may be necessary before the patient is brought back to consciousness. It has been estimated that in about 7 per cent of the cases of shock, early termination of the deep coma may be necessary because of alarming signs or symptoms (Cobb).[5]

In 1935 von Meduna [6] published his paper on "Versuche über die biologische Beeinflüssung des Ablaufes der Schizophrenie, I. Campher-und Cardiazolkämpfe." He presupposed a biologic antagonism between epilepsy and schizophrenia, a view which has not had universal acceptance. He reported a remission rate of 90 per cent in early and subacute cases and 24 per cent in chronic cases. The technic of therapy is comparatively simple. von Meduna originally advised an initial intravenous administration of 3 c.c. of cardiazol (metrazol) with an increase of 1 c.c. if a convulsion is not obtained. The maximum amount which has been recommended is 10 to 12 c.c. We have not had to go beyond this amount in the treatment of our cases. Thus far 11 c.c. has been the maximum dose.

The technic of the therapy as advised by von Meduna consists of two injections per week. Within a few seconds to minutes after the intravenous injection of 3 c.c. to 10 c.c. of metrazol, the patients usually give a short cough. This is followed in rapid succession by generalized body twitching, opening of the mouth, frequently with a cry, generalized convulsive seizures of the entire body, intense rigidity, gradual closing of the mouth with such vigor that frequently the patients have bitten through a padded wooden tongue depressor. Then cyanosis, dyspnea, apnea occur until finally after a few seconds of cessation of breathing the patient suddenly inspires and relaxes. The mouth gag is usually kept in the mouth rather tightly until the patient returns to full consciousness and frequently the patient makes sucking movements on the mouth gag. The patients frequently are in a confused state which lasts for a variable period after the convulsion is at an end. They may struggle to get out of bed or they may talk in an incoherent manner. Frequently they are confused for a period up to two hours and are then able to be up and around and are then given their food after three or four hours.

In the preparation of the patients for the treatment, a complete physical examination is essential. Unless there are gross evidences of cardiac, renal or vascular disease, the treatment can be safely given, beginning with the minimal doses. In one of our cases, the treatment was inadvertently given during an attack of asthma without harmful effects. The patients are usually given a cathartic the evening before the injection. No food is given for

six hours prior to the treatments. If bowel movement has not occurred within two hours prior to the injection a cleansing enema is given. No sedatives are given for a day or two prior to the injection of the drug.

Since von Meduna's presentation only a few articles have appeared in the literature on the treatment of schizophrenia with metrazol. von Angyal and Gyarfas [7] in 1936 reported the results of their treatment of 45 schizophrenic patients with metrazol. Their results showed a recovery rate of 44 per cent in 27 patients with a duration of less than one year. In 18 patients where the duration of the disease was longer than one year only 4 per cent recovered. These are the only authors who have reported a single fatality from metrazol.

Two of the earliest confirmatory papers from England were by Finiefs [8] and Gillies.[9] In both of these articles no figures were given but the statements were made that the treatment was of value in schizophrenia, particularly in the early cases. The most recent article by Finkelman, Steinberg and Liebert [10] report 66 patients at the Elgin State Hospital analyzed according to the duration and type of disease. They concluded that the rate of remission is almost inversely proportional to the duration of the psychosis. They felt that the type of disease that shows the greatest tendency to remission was the catatonic form "followed closely by the paranoid."

Kennedy [11] collected one thousand cases that have now been treated in the various hospitals in Europe. He himself reports three additional cases. He feels that there is little doubt that according to the Kraepelin classification the catatonic form reacts best and the paranoid is least affected by metrazol in contrast to the results in insulin treatment. The remission rates, particularly in the catatonic form, compared favorably with the insulin-shock therapy.

Owensby [12] reported 10 cases which were begun in September, 1937. His series of cases were more diversified types than any reported since von Meduna's original paper. He was unwilling to evaluate his results other than to state that "a remission of symptoms occurred in each of our patients and at the time of this writing none showed any evidence of a return to their former mental state." He felt that to secure a prolonged remission or

cure, it was necessary to combine "psychiatric procedure with the convulsive therapy." He advocated psychiatric or psychoanalytical treatment after the therapy to maintain the mental equilibrium of the patients.

Van Wulfften Palthe [13] reported 17 cases of schizophrenia. In 13 of these the treatment was completed and in 11 a complete remission occurred. In the two other cases in which the disease had been most severe there were changes but no improvement even after 20 injections. The author claimed that the rapidity with which the symptoms disappeared is surprising and the improvement which takes place is different from anything that is ordinarily observed in these cases. He, too, obtained luxation of the jaw and a fracture of an arm in one case but there were no harmful sequelæ in 124 induced convulsions. He stated that the treatment is a "heroic measure."

Brousseau [14] treated 110 cases of schizophrenia with cardiazol according to the method of von Meduna. Improvement occurred in 53 cases. In cases of recent onset remissions occurred in 82 per cent. No remissions were obtained in 26 patients ill more than five years. Occasionally remissions were obtained within 24 hours; in other cases after 14 days or more.

Scheuhammer and Wisgott [15] completed treatment in 30 patients, of whom 43 per cent showed complete or almost complete remissions. Here also the duration of the disease had a definite prognostic value.

Friedman [16] treated 20 patients in which group 15 were said to have improved sufficiently to permit discharge from the hospital. Three remained unimproved.

Sorger and Hofmann [17] completed treatment in one hundred cases of schizophrenia. In the acute cases, sick less than six months, remissions were obtained in 76.3 per cent while in those ill over one year remissions were obtained in approximately 25 per cent.

Low *et al.*[18] have used metrazol in 66 patients with "functional psychoses," 35 of which were schizophrenic psychoses. In their schizophrenic group the treatment yielded a relatively high rate of recovery only if given within six months after the onset of the disease. In their schizophrenic group the recovery rate was 22.9 per cent, a figure which startlingly enough is below the figure of 30 per cent given in the literature (Mayer-Gross or Fuller—

quoted by Low *et al.*) for the spontaneous remissions after 10 years or more. These authors also had no serious mishaps of any kind. The patients were carefully studied, were given graduated doses of the drug and aside from jaw and shoulder dislocations showed nothing to render the treatment impossible except in several patients in whom electrocardiographic evidence of myocardial damage was noted.

Report of Cases.

Case 1.—M. G., a 24-year-old married woman, was given "alcohol injections" to block the sympathetics in an effort to relieve a severe asthmatic condition. As the result of the inadvertent injection into the subarachnoid space she became paralyzed in both lower limbs. She was treated in various hospitals and recovered the use of her right lower limb and to a less extent of the left. She began to be able to walk with the aid of a cane. In May, 1937, the mother noticed there was something mentally wrong with her daughter. She became confused, had many stormy episodes, was antagonistic, destructive, aggressive and apparently hallucinated. She was studied at a hospital where the impression was that the patient showed a mixed form of psychosis, more schizophrenic than manic. Metrazol treatment was started 10/24/37. Seven injections were given with only five convulsions. Beginning with 3 c. c. of metrazol, the dosage was increased to 4 c. c. Thirty to 45 units of insulin were given daily except on the days of metrazol treatment. The patient improved very rapidly. She refused to take further metrazol treatments. In view of her improvement and the fact that the patient was developing a severe universal eczema and asthma, we did not urge the patient to continue treatment. She has been discharged from the hospital since December, 1937. We have seen the patient on two occasions since her discharge and she has remained normal mentally up to a few days ago. (Further treatment has been given and the patient is now in a complete remission, July, 1938.)

Case 2.—C. G., a 28-year-old married woman, was first seen September 18, 1936. She had been ill more than a year. She had been at a hospital for nine weeks and was at home over nine months. She had lost 60 pounds in weight during her illness. She was catatonic. Insulin therapy was started in September, 1936. Shock occurred with insulin injections of 275 units. Only slight and very temporary improvement occurred. For a day or two she would improve, particularly on the day when insulin shock occurred, only to lapse into her former state. After the shock doses, smaller doses of insulin were used and it was found that even with 35 units shock occurred. This was continued over a period of many months with only slight improvement. On November 1, 1937, metrazol therapy was started in view of the family's insistence that something more should be done for the patient.

Metrazol therapy was done at home with the aid of two additional nurses. Out of a total of 19 injections, the patient had 12 convulsive attacks. We began with 5 c. c. of metrazol and increased to 8 c. c. On alternate days 25 units of insulin were given and on the days of metrazol injections 25 units of insulin were given one hour before the injections. There has been a most remarkable and startling change in this patient from the metrazol therapy after the fourth or fifth convulsive attack. The patient has now made a complete remission.

CASE 3.—D. G., a 15-year-old girl, was first seen in consultation with her physicians 11/24/37. She had been normal up to four months before the time that we saw her. She became quiet and depressed. She had alternate periods of excitement. She complained that the neighbors were influencing her behavior. For approximately three weeks she had been singing and talking to herself. She had involuntary urination. She had refused to eat and had to be tube fed. She had been gone over very carefully from the physical angle by Dr. Benjamin Robinson who could find no abnormalities of the body organs. When we saw her she made silly remarks. She was actively hallucinating. She would laugh and cry without corresponding emotions. There were no neurologic abnormalities. A diagnosis of early schizophrenia was made. Metrazol therapy was begun 11/28/37. Out of 36 injections of metrazol, convulsive reactions occurred 20 times. Considerable difficulty was experienced with this patient because of the large doses required. She has had to have the largest dosage that we have thus far given to any patient, up to 11 c. c. We had begun with 4 c. c. Her convulsions, however, have been intense. In the beginning when smaller doses of metrazol were given there was no improvement at all in her mental picture. She was actually "wild," needed continued restraint and hot packs to control her excitement. As soon as the convulsive attacks occurred, noticeable improvement took place. Twenty-five units of insulin were given one hour before the metrazol injections. Patient is now at home in a complete remission.

CASE 4.—M. A., a young man of 24 years of age, was first seen at a small private hospital. He was highly excited. He protested violently against being incarcerated and maintained that he was mentally normal. He admitted hallucinations and had definite ideas of reference. He was immediately put on metrazol therapy beginning with 5 c. c. on October 30, 1937. The maximum dosage was 7¾ c. c. Twenty-five units of insulin were given one hour before metrazol injection. He was given 25 metrazol treatments with 21 convulsions. He is in a remission now. One of his first complaints on coming to himself was the fact that his condition came on as the result of self-consciousness due to a harelip. In fact, whenever we would enter the room he would always have the bed-coverings hide his lip deformity. On discharge from the hospital he told me that in order to prevent a recurrence he wanted a plastic operation on the lip. This has been taken care of.

CASE 5.—F. E., a boy of 19 was first seen 9/12/36. The duration of illness was only three months. He began to talk to himself. He gave up his

job because he heard his employer state that he was crazy. He thought there was a dictaphone in the house and broke up the radio to find it. He talked with God and his dead grandfather. He was disoriented, actively hallucinated, had ideas that people next door were influencing his behavior and became excited on the least questioning. He was sent to a small private institution where insulin therapy was begun at once. Dosage was gradually increased for a period of seven weeks without shock. Suddenly with 300 units of insulin the patient went into shock from which he could not be aroused. Glucose was given by vein on several occasions, until the blood sugar reached 277. It looked as though the patient would not come out of the coma, despite all sorts of treatment including adrenalin, cardiac and respiratory stimulants and atropine, because of beginning edema of the lungs. Because this was our first experience with this reaction we did not realize that more insulin was required to bring the blood sugar down to normal. After 40 hours of coma the patient gradually roused and on recovering complete consciousness in the course of the next two or three days the patient's mental picture was entirely changed. He had no recollection of his previous mental abnormalities. He was clear, oriented and coherent. He had only an occasional delusional trend. No further treatment was given because of the fear of repetition of the coma. Patient was discharged from the hospital April, 1937, to a convalescent home and then to his own home. For a period of nine months he was in business for himself and did nicely. At the end of this time he began to have a recurrence of his mental symptoms. On January 13, 1938, at home with the aid of a physician and a nurse, metrazol was started. Patient was later transferred to a hospital and insulin shock therapy given in addition to metrazol. Five c. c. were given at the first injection. Twenty injections have been given. The dosage has been gradually increased to 8 c. c. Convulsions were obtained on every occasion. A very marked improvement has thus far resulted and patient is now in a second remission. He is still under observation.

Comment.

Thirty-five cases treated with metrazol are reported in this presentation. They have been unselected cases of schizophrenia as they occurred in our private practice. Most of them were treated in small private institutions. Two were treated at home. The initial dosage has been 3 or 4 c. c. and has been gradually increased only if a previous injection failed to produce a convulsion. Two treatments per week were given. We have obtained good results in 19 cases (7 remissions, 12 improved).

Careful analysis of the entire group has disclosed the fact that the duration of illness is an important factor in the ultimate prognosis. Two apparent contradictions to this have been noted. Oc-

casionally a good result has been obtained even when the patient has been sick for a long period of time and secondly no result has been obtained in some cases of short duration. It is to these two types of cases that we must give special attention. It is true that duration and type of disease are important factors but it is also true that there must be some other factor which plays a part in determining whether or not a schizophrenic patient will have a remission. We have become convinced that the "remission-probability" corresponds to a greater degree on the amount of deterioration than on the duration and type of disease. As Solomon *et al.*[3] have shown, carbon dioxide-oxygen inhalations transformed into "practically normal individuals" those patients in whom deterioration was not present. When the cases were old and deteriorated, even the immediate response was not normal.

Possible Ill Effects.—von Meduna[6] observed no serious complications in a series of 1000 induced convulsions. Gillies[9] reported that in his own experience of 60 induced convulsions the only ill effects have been slight and short-lived attacks of vomiting, transient attacks of moderate tachycardia and occasional thromboses of the injected veins. Kennedy[11] claims that the mortality rates compare favorably with the insulin shock treatment. In the literature dislocations of the shoulder and jaw have been reported. A fracture of an arm was reported by Van Wulfften Palthe.[13] One death has been reported by von Angyal and Gyarfas.[7]

In our series of 35 cases, we have had the following complications: Bilateral luxation of the shoulders in one patient with a recurring dislocation of the shoulder since that time; unilateral luxation of the shoulder in two cases; bilateral dislocation of the jaw in one case; unilateral dislocation of the jaw in another case; tearing of the muscles of mastication on one side in one case.

In order to obviate the danger of shoulder dislocation we have elicited the help of Dr. A. M. Rechtman, an orthopedic surgeon, in devising an apparatus for preventing this complication. The apparatus and the description of it is to be published in conjunction with Dr. Rechtman in the near future. This apparatus, shown in Figs. I and II, can be applied to the patient in a few minutes and removed immediately at the end of the convulsive attack while the patient is still comatose. In lieu of this apparatus it is necessary to have a nurse restrain each arm firmly to the side of

the body to prevent abduction at the shoulder. The abduction is the initial movement of the convulsive attack and it is at this point that the subluxation occurs. In two cases there has been a little difficulty in initiating respiration at the termination of the convulsive attack. We have made it a rule to begin artificial respiration as soon as the violent convulsive movements are at an end.

Unless a padded tongue depressor is held in the mouth there is a possibility of the patient's tongue being caught in the vise-like contraction of the jaws which follows the preliminary opening of the mouth. One nurse must be carefully instructed to take care of this and to prevent the tongue from being bitten. In only one case have we had an injury of the tongue due to an inexperienced nurse's inability to push the tongue backward as the jaws were closing. Fortunately, no serious damage was done. In one case several teeth were loosened by the force of the contraction of the jaw and in one case a tooth was broken off.

While it is not wise to give this treatment to patients who have organic disease of the heart, lungs or kidney, we have given the treatment to one patient with asthma without serious consequences. This is the patient reported as Case I, who had made a very excellent recovery until recently. In one case on several occasions small conjunctival hemorrhages appeared the day following the injection.

It has been our experience that if for some reason or other a convulsion is not obtained from a metrazol injection, the patients do very badly during the days following or until the next convulsion is obtained. The attendants have noted this and have called my attention to the fact that patients are much more difficult to manage if a metrazol injection has not resulted in a convulsion.

Metrazol has been given to this group of patients in order to estimate its action and results, in comparison with insulin shock therapy. It has been found that metrazol is much easier to give, much safer and is less expensive because it requires a less elaborate hospital set-up. We have used metrazol in several cases where insulin shock therapy has failed to produce a remission with good results in 19 cases. We have also used it in one case where we could not obtain shock with as much as 500 units of insulin. In two cases metrazol has been used with good results after relapses have occurred following remissions of six and nine months by

FIG. I.—Anterior View of Restraining Apparatus to Prevent Shoulder Dislocation.

FIG. II.—Posterior View of Same Apparatus.

the insulin shock therapy. Metrazol was used in an effort to prolong the remission period.

Our results have shown a remission in seven cases, two of whom have since had a return of symptoms. Improvement has occurred in nine cases, enabling the patients to adjust at a little lower level. Slight improvement has occurred in four cases. No improvement occurred in eleven cases. Four patients are now improving under treatment still in progress.

In a critical analysis of the group of cases that we report the duration of the disease has been a factor in determining the prognosis. The type of disease is also important, our results showing a better response in the catatonic than in the paranoid type. It is probably true that the makeup of the individual and his ability to adjust prior to onset of the disease was of great value in determining the eventual outcome. The most important single element which determined the prognosis of an individual case was the presence of deterioration. It is true that deterioration frequently bears a relationship to the duration of the disease. This is a general rule. Occasional cases will show improvement despite a longer duration while other cases show no improvement despite the history of a recent onset of the condition. The common denominator in all of these cases has been the degree of deterioration. If deterioration occurs early the patient will not make a completely satisfactory recovery. In several of our cases where the duration has been two years or less we have gotten but little improvement while in other cases ill three to five years with slight deterioration the results have been good or excellent. Solomon *et al.*[8] have shown that in catatonia temporary improvement can be obtained up to the point of the patient's mental level by the inhalation of carbon dioxide-oxygen mixture. At no time could a deteriorated patient be returned to normal but the long-standing deteriorated schizophrenic patient reacted to the full capacity of his cerebral process for a short time after this inhalation.

In many of our cases we have attempted to enhance the action of the metrazol by small dozes of insulin and in a few cases by larger shock-producing doses. In the former group we have given 25 units of insulin one hour before metrazol. At times we have felt that it has caused the convulsions to occur with greater facility than with the metrazol alone. In order to stimulate the appetite

and keep up nutrition we have given more or less routinely five units of insulin one-half hour before meals. In five cases we have augmented the metrazol with shock-producing doses of insulin on the days when metrazol was not given. Of these five patients only one made a complete remission which was very temporary. One patient improved sufficiently to return to his home where he is making an adjustment at a lower level. One patient who had a relapse after a remission of symptoms for a period of nine months is again in a remission. Two patients were either not improved or made worse. In one patient who was sick but nine months no improvement resulted despite both metrazol and insulin. In this patient deterioration was marked from the very beginning.

Summary and Conclusions.

1. Thirty-five cases of schizophrenia have been treated with metrazol, varying in age from 15 to 46 years, the majority between 20 and 30 years. The duration of the illness varied from five weeks to 12 years.

2. The treatment has been found safe and without permanent sequelæ except a recurring shoulder dislocation in one of our cases. Shoulder dislocations have been noted in three of our cases, jaw dislocations in two cases and tearing of the muscles of mastication in one case.

3. A belt has been devised to restrain the patients during the convulsive attack to prevent the shoulder dislocations. This has proved effectual.

4. Metrazol has been used in patients in whom insulin-shock therapy has failed, and where shock has not been able to be obtained from as much as 500 units of insulin.

5. Our results have shown a remission in seven cases, two of whom have since had a return of symptoms. Improvement has occurred in nine cases, enabling the patients to adjust at a little lower level. Slight improvement has occurred in four cases making the patients either better hospital cases or enabling us to send them home under supervision. No improvement occurred in 11 cases. Four patients are now improving under treatment that is still in progress. The cases that have had remissions have been ill for periods of four months to five years. The cases that have shown

no improvement at all have been ill for periods of nine months to 12 years, the majority of cases having been ill over five years. Slight improvement has occurred in cases ill for periods of two years to eight years, the majority of them being ill over two years duration. Improvement has occurred in cases ill for periods of five weeks to eight years, the majority of them being ill over two years.

6. Detailed analysis of our cases shows that while the duration of disease is a factor in determining the prognosis, as well as (1) age of patient, (2) age at onset, (3) type of disease, catatonic, paranoid or hebephrenic, (4) makeup of individual prior to onset, the most important single element is the presence of deterioration. We have had better results with the catatonic than with the paranoid type of disease.

7. Different methods and combinations have been used—metrazol itself, metrazol plus small doses of insulin every day of the week including days of metrazol treatment, and metrazol in combination with shock-producing doses of insulin five days weekly but not on the days of metrazol therapy. All have proven effective in early cases without deterioration.

8. The results of our treatment have amply justified this method. It is safe, can be used in private practice and even at home.

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A CHART FOR CONTROL AND RECORDING OF INSULIN SHOCK THERAPY.*

By DOUGLAS GOLDMAN, M. D., Cincinnati, Ohio.

In psychiatric clinics where hypoglycemia therapy is carried out on a large scale, the keeping of adequate records and nursing notes of the individual shock periods presents a serious problem with the usually limited personnel available. To give a number of patients in coma adequate care and still record the changes taking place on the usual nursing records is more than can be reasonably expected of even good nurses and attendants.

The problem has been met by the use of a special record form which allows regular recording of temperature, pulse and respiration and other general changes, and in addition lists the common and more easily recognizable symptoms of hypoglycemia in the order of their appearance so that they can be checked if present at 15-minute intervals. In addition to serving as a nursing record the chart presents an accurate and practically useful record of the depth and duration of the coma and the occurrence of important individual symptoms.

The orderly sequence of stages of hypoglycemia was first described by V. Angyal,[1] but his description of the symptoms and stages is too involved for every day use. He divides hypoglycemia into six stages and several substages according to neurologic manifestations only, and in addition makes rather involved neurobiologic deductions from his observations. The division used in the proposed record form is simpler and more practical, uses neurologic and other manifestations; and the symptoms listed can be recognized very readily by intelligent attendants after brief demonstration and training. This form has been used daily in a clinic where 25 patients are simultaneously in deep hypoglycemic

* From Longview Hospital, Cincinnati, Ohio, Dr. E. A. Baber, Superintendent.

[1] V. Angyal, L.: Über die Motorischen und Tonischen Erscheinungen des Insulinshocks. Zeitschr. f. d. ges. Neurol. u. Psychiat., 157: 35-80, 1937.

coma. It was devised after observation of over 1000 individual hypoglycemic coma periods and has since been used to conduct and control nearly 5000 more in 94 patients.

The symptoms of hypoglycemia occur in approximately the order listed in the four stages of coma described by the chart, with only minor individual variations. All the changes observable are not included, but it is felt that making the record more cumbersome would reduce its practical value. It is seen from these charts that a definite "coma curve" can be recorded showing the time of onset, speed of descent, duration at any given depth, etc. If patients spontaneously awaken, as they do after epileptiform seizures and prolonged "tonic spasms," this can be indicated by arrows as shown in the chart.

Certain of the symptoms listed need brief explanation. It is noted that *sweating* is recorded in both stages I and II. Stage I *sweating* is mere palpable moistness of the skin, while stage II *sweating* is profuse perspiration in large drops. This, it must be noted, is often present throughout stage III. It must also be pointed out that certain symptoms persist into the deeper stages of coma, while others do not. In other words the depth of coma is to be estimated by the symptoms indicating greatest depth. The stages designated are arbitrary and the transitions are very gradual with much overlapping of symptoms.

Twitching in stage II is sometimes difficult to differentiate from *athetosis* in stage III. The athetotic movements are much more gross than the earlier twitching, but tend to be more rapid than those observed in non-comatose patients. The marked tetanic contractions of the extremities and trunk which take the form of typical tetany such as is seen in hypocalcemia (which is not present in these patients) are designated as *tonic spasm* in stage III. *Stupor* is differentiated from *coma* by the patient's response or lack of it respectively. This is practically the only point in the whole record in which individual judgment and training play any part.

Form No. H-11

LONGVIEW STATE HOSPITAL
MEDICAL DEPARTMENT

HYPOGLYCEMIA RECORD

TREATMENT No. 41 DATE 3-8-38

NAME R. S. COUNTY UNITS INSULIN 170 TIME 6:15 DR.

	6:00	:15	:30	:45	7:00	:15	:30	:45	8:00	:15	:30	:45	9:00	:15	:30	:45	10:00	:15	:30	:45	11:00	:15	:30	:45	12:00	:15	:30
Temperature	99												98				97										
Pulse: rate	92				88				96				98				88										
rhythm																											
volume																											
Respiration	22				22				18				18				20										
Blood Pressure																											
Stage I																											
Restlessness					✓			✓	✓																		
Sleepiness						✓	✓																				
Hunger																											
Regression																											
Sweating						✓	✓	✓	✓	✓	✓	✓															
Stage II																											
Sweating													✓	✓	✓												
Twitching											✓	✓	✓	✓	✓												
Sucking movem's																	✓	✓									
Exophthalmos									✓	✓	✓	✓	✓				✓	✓									
"Grasping"																	✓	✓									
Stupor											✓	✓					✓	✓									
Stage III																											
Coma													✓	✓	✓	✓				✓	✓						
Pos. Babinski														✓	✓	✓					✓						
Rigidity																											
Athetosis																											
Salivation															✓	✓				✓	✓						
Pilomotor React.																											
Tonic Spasm																											
Stridor																											
Epileptiform Conv.																											
Stage IV																											
Collapse of Nares																											
Fixed Const. Pupil																											
Loss of Reflexes:																											
Patellar																											
Biceps																											
Babinski																											
Corneal																											
Cheyne-Stokes Resp.																											
Pupil																											
Pallor																											
Flushing																											
Cyanosis																											
Pleasant																											
Resistive																											
Noisy																											

Regular diet 12:00 Appetite good.
To Ward 12:30

TERMINATION TIME 10:00 METHOD Nasal Gavage BY WHOM

MULTIPLE THERAPY IN THE PSYCHOSES.*

By H. H. GOLDSTEIN, M. D., E. F. DOMBROWSKI, M. D., and J. V. EDLIN, M. D.,
Chicago, Ill.

There can be no doubt that the introduction of so-called shock therapy in the treatment of schizophrenia and other psychoses has brought about an increased interest and enthusiasm in psychiatric work. An unusual opportunity for many physiological and biochemical studies and unusual possibilities for further clinical observations on the effects of more than one type of therapy in treating psychotic patients has been offered. Since Sakel's original description of his treatment of the psychoses with insulin, numerous reports have been made concerning the effects of insulin shock upon the psychoses.

There has been a wide-spread use of insulin throughout Europe and in this country for the treatment of psychoses, especially of the schizophrenic type. Although various individual modifications of method of therapy have arisen, the procedure remains essentially as outlined by Manfred Sakel. A preparatory phase consisting of increasing doses of insulin beginning with about 15 to 25 units and increasing daily initiates the therapy. The dosage is increased until the shock phase is produced by a daily increase of 5 to 10 units. A rest of one day is given at the end of six days of treatment. The polarization phase as described by Sakel and discussed by Wortis [1] in the English literature is not consistently used in the treatment as carried out by us.

The first account of a large series of cases treated was given by Dussik and Sakel [2] in which they found a full remission rate of 70.7 per cent. This remission rate was substantially verified by others reporting large series. Muller [3] finds a remission rate of about 80 per cent in patients having a psychosis of less than six months. In a large group treated at the Elgin State Hospital by Heilbrunn and Schiller [4] and reported by Schiller in the Psychiatric

* From the Chicago State Hospital, Edward F. Dombrowski, M. D., Managing Officer.

Exchange of the Illinois State Institutions, a remission rate of 82 per cent was reported in cases of less than six months' duration. Although occasional reports have failed to verify the high remission rates as shown by Sakel, Muller and others, most reports indicated that such high remission rates were to be expected in early cases.

It was only a short time after the development of insulin hypoglycæmic treatment that metrazol therapy was introduced. There was an almost immediate acceptance. The technique of convulsive therapy with metrazol has been somewhat modified by us, but in general the original method as given by Meduna [5] is used. Injections of metrazol are given twice weekly, with an increment in dosage depending upon the reaction of the patient. If improvement occurs early, the patient is given several treatments beyond the point of recovery. A total of 10 to 15 treatments is given if patients do not show improvement. If warranted by improvement, therapy may be carried considerably beyond this point.

The authors have had a rather extensive experience in the treatment of schizophrenic and other functional psychoses with metrazol. To date nearly 400 patients have been given therapy and in general the remission rate has very closely paralleled the remission rate of early cases receiving insulin therapy. Meduna [5] originally reported a remission rate of 39 per cent in all cases treated. Since his original article several reports on large series of cases show that the remission rate in early cases closely parallels the remission rate claimed for insulin treated patients in the more optimistic reports. The authors [6] in treating a large series of cases with metrazol found a remission rate in excess of 80 per cent in cases of less than six months' duration. This remission rate in early cases has been consistently verified by authors treating large series. Meduna [7] reports 80 to 90 per cent remissions, Sorger,[8] 76 per cent, Brousseau,[9] 82 per cent. In Illinois state institutions, where metrazol is being used rather extensively in treatment of schizophrenia the general opinion indicates a much higher remission rate than could be expected to occur spontaneously.

It was quite natural with the introduction of two new forms of therapy within a short space of time both of which offered such promising possibilities that various combinations or modifications of therapy might be considered. Shortly after insulin shock therapy

was introduced in Illinois, it was decided to treat cases which failed to respond to insulin with the convulsive form of therapy. At the Illinois Research Hospital, Low [10] has introduced a schedule of therapy in which patients failing to respond to one type of therapy are given another. At Elgin State Hospital some patients failing to respond to insulin have been placed on metrazol therapy.

Our report of 10 patients who received a course of insulin, failed to respond and were then given metrazol indicates the possibilities which such treatments offer. Of the patients treated, six were males and four females. The length of insulin therapy varied from 4 to 12 weeks.

The chart on page 324 indicates the results of therapy in which metrazol was given to patients in whom it was felt recovery had not occurred on insulin therapy. It is immediately noted that of the five patients who recovered the duration of illness was less than six months in all except one and in the one exception the illness had been present about one and one-half years. Although this group of cases is small the recovery rate of 50 per cent of those receiving both types of therapy would appear to indicate that in cases which fail to improve under insulin metrazol therapy should be resorted to.

The following case history illustrates our results:

B. B. age 23, a married white girl first developed evidence of psychotic behavior in March, 1937, two weeks after a rather uneventful pregnancy. She became nervous and restless on returning from the hospital and shortly afterwards accused her husband of infidelity and felt that she or her baby must die and that it must be the patient who would die in order that her husband might live with the woman he loved. She became disturbed and attempted to kill her child. Following a period of acute psychosis she lapsed into a mute, resistive and negativistic state. Insulin shock therapy was begun about three months after the onset of the psychosis. She was given insulin therapy about six weeks and remained unimproved. Consent for therapy with metrazol was refused and the patient remained mute, untidy, resistive and negativistic from August when therapy was discontinued until March, eight months later, when she was given metrazol therapy. After four grand mal seizures, the patient was talking and showed marked improvement. After eight grand mal seizures, she was found to be entirely free of psychosis.

While we do not wish to consider at this time the advantage of one type of therapy over another, we feel that our results to date warrant the opinion that in state work metrazol therapy should be given preference over others as the first therapy instituted.

RESULTS OF TREATMENT WITH METRAZOL OF PATIENTS WHO FAILED TO RESPOND TO INSULIN.

Name.	Age.	Duration.	Diagnosis.	Results of insulin therapy.	Metrazol reaction.	Final result.	Remarks.
W. M.	31	8 to 10 years	Dementia præcox paranoid.	Unimproved.	10 grand mal. 2 petit mal.	Unimproved.	
C. H.	28	2 mos.	Dementia præcox hebephrenic.	Unimproved.	20 grand mal. 4 petit mal.	Recovered.	Showed signs of relapse. Given one treatment. Released again; home 5 mos.
E. H.	27	3 to 6 mos.	Dementia præcox hebephrenic.	Unimproved.	6 grand mal.	Recovered.	Possible relapse.
B. N.	31	1 yr., 6 mos.	Dementia præcox catatonic.	Markedly improved. Relapse.	6 grand mal. 5 petit mal.	Recovered.	
H. P.	23	3 to 6 mos.	Dementia præcox hebephrenic.	Unimproved.	30 grand mal. 1 petit mal.	Institutional improvement.	Also received combined fever, metrazol and iodide therapy.
A. S.	28	6 yrs.	Dementia præcox hebephrenic.	Unimproved.	2 grand mal.	Unimproved.	Showed improvement on 2 treatments, fracture of humerus. Relapse.
B. B.	23	3 mos.	Dementia præcox catatonic.	Unimproved.	8 grand mal.	Recovered.	
E. C.	27	?	Dementia præcox hebephrenic.	Unimproved.	17 grand mal. 1 petit mal.	Unimproved.	
G. T.	35	6 yrs.	Dementia præcox catatonic.	Unimproved.	18 grand mal. 2 petit mal.	Unimproved.	
J. A.	28	2 mos.	Dementia præcox catatonic.	Institutional improvement.	4 grand mal.	Recovered.	

Summary and Conclusion.

1. Insulin hypoglycæmia treatment of schizophrenia results in a large percentage of remissions in early cases.

2. Metrazol or convulsive therapy is followed by a percentage of recoveries in early cases which closely parallels the most optimistic reports on insulin shock therapy.

3. In 10 patients treated by insulin hypoglycæmia with no improvement five, or 50 per cent, recovered and one showed an institutional improvement.

4. Cases having failed to respond to one type of accepted therapy should be tried on another.

5. Because of the number of patients to be treated and the relative difference in cost of treatment, metrazol therapy should be given before insulin therapy in routine state hospital care of schizophrenic cases.

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THE EARLY EFFECTS OF METRAZOL THERAPY IN CHRONIC PSYCHOTIC OVER-ACTIVITY.*

By LOUIS H. COHEN, M. D.

Adequate treatment of over-activity, especially when it has persisted for long periods of time, is notoriously time-consuming and arduous. All conventional forms of treatment, such as continuous baths, packs, seclusion and chemical sedation, involve restraint, and, more frequently than not, are efficacious only during the period that the therapeutic agent is operative. From exploratory investigations of the convulsive treatment of schizophrenia with metrazol, the impression was gained that considerable diminution of motor over-activity, in disturbed patients, had taken place. The present report is concerned with the convulsive therapy of over-activity in schizophrenic and chronic manic patients. As will be seen, the procedure is a relatively simple and economical one, it does not involve restraint, and in addition, it offers the advantage of persistent effect such that even after treatment has been discontinued, most patients remain quiet and coöperative, and many, for the first time in years, become capable of doing productive work. It may be stressed that the significance of these findings for the solution of some administrative problems concerning the handling of chronically disturbed patients may be considerable.

Case Material and Procedure.

Up to March 31, 1938, 42 patients had been studied. Of these, 40 are schizophrenics and 2 chronic manics (16 men and 26 women). One of the chronic manics is a male, and the other a female. The age range of the male patients is from 22 to 52 years, and of the female patients from 19 to 60 years. The patients have been in hospital from 1 year to 22 years. The range of time spent in dis-

* Read at the annual meeting of the New England Society of Psychiatry at the Neuro-Psychiatric Institute of the Hartford Retreat, Hartford, Conn., April 26, 1938.

From the Research Service of the Worcester State Hospital, Worcester, Mass.

turbed wards is from 6 months to 22 years. The patients have been over-active, over-talkative, aggressive and destructive; incontinence (including smearing with fæces) has been frequent; almost constant sedation has been necessary. Only 4 of them during the period of persistent over-activity have been capable of any work. Such a group of patients is familiar in every mental hospital population.

Metrazol treatment has recently become so well known that only brief mention of its rationale and mode of administration need be made here. It has been assumed by Meduna [3] and others that there exists a biological antagonism between schizophrenia and epilepsy, hence the attempt to treat the former by induction of convulsions. Alternative theories are that, by means of convulsive seizures, the functional barriers said to be characteristic of defects in the metabolism of the schizophrenic brain are broken down; and that, by virtue of convulsive seizures, new kinds of developmental functional processes are established.[2] It appears from cinematographic records that the seizure itself characteristically involves successively higher levels of the nervous system, *viz.*: medulla, mid-brain, basal ganglia and cerebrum.[1] Whether or not the *grand mal* or *petit mal* convulsion *per se* is essential for best therapeutic results is problematic; the writer is of the opinion that the manner and speed of the interruption and re-establishment of the stream of consciousness are of primary importance, and that the convulsion plays only a secondary röle.

Metrazol (cardiazol, pentamethylenetetrazol) is an analeptic drug which is quickly diffused and rapidly destroyed in the body. It is used in 10 per cent aqueous solution and administered intravenously. Injection must be as rapid as possible. The "orthodox" technique has been to attempt a diminution of the patient's convulsive threshold before metrazol injection is begun; to this end over-hydration, alkalinization and a course of intramuscular injections of camphor-in-oil over a period of several weeks have been advocated. Metrazol injections, beginning with a dosage of 5 cc., are then begun; a course of 20 to 30 convulsions, with treatments two or three times per week, has been advised.[3] The writer [1] has demonstrated that such procedure as hydration, alkalinization and camphor-in-oil injections are apparently unnecessary; furthermore, metrazol injections beginning with a 3 cc. dosage have been found to be adequate for the production of seizures. The dosage is increased by 1 cc. amounts when convulsions

are not produced at lower dosages. In some patients, 1 cc. or 2 cc. were sufficient to produce seizures. Dosages above 8 or 9 cc. were infrequently reached; in one patient a maximum dosage of 14 cc. was given, and in one other, 17 cc. No ill effects, beyond occasional vomiting, were observed even at large dosages. The only serious complication met was dislocation of the shoulder (2 patients) but it was found that this danger can be avoided by proper handling of the patient during the seizure, *i. e.*, by gentle prevention of abduction of the arms. In some instances seizures have been produced with dosages lower than the convulsive threshold which had previously been reached. A lower dosage was sometimes found to be convulsant for those patients in whom the *grand mal* seizure was characterized by a prolonged tonic phase, by flexion of the arms at the elbow, by over-adduction of the thumbs, or by downward deviation of the eyes (which is rare). Vesical incontinence, though infrequent, was more often observed in women than in men, rectal incontinence scarcely at all. The contra-indications listed by Friedman [2] are acute febrile illness, evidence of cardiovascular disease, menstruation, abnormal laboratory findings, and a history of head trauma with subsequent unconsciousness; but in the present series menstruating women were included with no apparent ill effects.

The optimal duration and frequency of treatments is still an open problem. In the series of patients to be presented here, treatments were given daily and the course terminated when it was felt that further amelioration of the patient's clinical state was improbable. Obviously this procedure is entirely arbitrary since there is as yet no evidence available whereby one might judge that more or less frequent or prolonged treatment is indicated in given instances. Treatment was terminated after 3 to 15 seizures in the present group; if relapses occurred, treatment was again begun.

Evaluation of a given patient's condition before and after treatment involved clinical observation by physicians, nurses and attendants; records of hydrotherapy and other sedation; records of aggressiveness and destructiveness; and work reports. For purposes of convenience the data are presented under specific clinical aspects, namely, over-activity, over-talkativeness, aggressiveness, resistiveness, destructiveness, incontinence, sedation necessary (including continuous tubs, packs, seclusion and chemical), and work (including ward, industrial and occupational).

Results.

The findings are given for men, women and both groups combined in Table I. A "+" indicates that the given characteristic is

TABLE I.

	Male (16).		Female (26).		Total (42).	
	(A) Over-Activity.					
	Before.	After.	Before.	After.	Before.	After.
+	16	1	20	6	36	7
±	0	6	5	12	5	18
−	0	9	1	8	1	17
	(B) Over-Talkativeness.					
	Before.	After.	Before.	After.	Before.	After.
+	8	0	19	6	27	6
±	2	2	6	18	8	20
−	6	14	1	2	7	16
	(C) Aggressiveness.					
	Before.	After.	Before.	After.	Before.	After.
+	11	1	19	2	30	3
±	1	2	1	4	2	6
−	4	13	6	20	10	33
	(D) Resistiveness.					
	Before.	After.	Before.	After.	Before.	After.
+	13	2	17	3	30	5
±	0	2	4	12	4	14
−	3	12	5	11	8	23
	(E) Destructiveness.					
	Before.	After.	Before.	After.	Before.	After.
+	10	2	11	1	21	3
±	0	2	8	5	8	7
−	6	12	7	20	13	32
	(F) Incontinence.					
	Before.	After.	Before.	After.	Before.	After.
+	3	1	10	1	13	2
±	3	1	1	7	4	8
−	10	14	15	18	25	32

TABLE I.—CONTINUED.

(G) SEDATION.

	Before.	After.	Before.	After.	Before.	After.
+	14	1	24	0	38	1
±	0	2	0	8	0	10
—	2	13	2	18	4	31

(H) WORK.

	Before.	After.	Before.	After.	Before.	After.
+	2	8	2	14	4	22
±	8	4	1	3	9	7
—	6	4	23	9	29	13

present, a "—" that it is absent, and a "±" that it is sometimes present and sometimes absent. The arabic figures refer to the number of patients in whom the given characteristic was present, variable or absent before and after treatment.

The duration of the ameliorative changes recorded after treatment has been from 29 to 71 days, an average of 55 days. These values pertain to 30 patients of this group in whom relapses did not occur and no further treatment was necessary. Of the 12 patients who relapsed, one is a male and the others are female. In the case of the male patient, marked improvement for a period of 21 days had occurred; he then relapsed but after one seizure again improved, and for the 15 days since treatment his improvement has been maintained. In the 11 female patients who relapsed, improvement had been maintained for a period of 10 to 35 days; after treatment 10 of these patients again improved and maintained the improvement for a period of 9 to 40 days, 4 patients relapsed again after 9 to 30 days, were treated, and 1 has again improved for 35 days. The remaining 4 patients manifest the picture of their former state despite a course of 15 seizures since their last relapse.

DISCUSSION.

It seems quite clear from these data that marked ameliorative changes in the clinical status of this group of patients have occurred during and after metrazol treatment. The restricted number of cases makes it impossible definitely to evaluate sex differences, but there is some suggestion that the changes are rather more

pronounced in the group of men than in the group of women. Generally, it may be seen from the tables that none of the patients are worse, that a few have remained unchanged, and that most of them have improved. The changes are most marked in over-activity, aggressiveness and destructiveness. Necessary sedation has been diminished practically to nil. As a positive feature, about half the group are now doing productive work.

In addition to these data, it may be mentioned that of 7 patients of the group who were open masturbators, 5 are now apparently less active in this respect and 2 have ceased open masturbation entirely. Of 25 patients whose speech was characterized by obscenity, 9 no longer manifest this trait, 8 have improved and 8 are unchanged. Of 28 patients who were easily irritated, 11 are no longer so, 8 have improved, and 9 are unchanged. Incoherent speech was observed in 31 patients before treatment; of these 13 have improved and 18 have remained unchanged. Of 16 patients in whom attempts at escape had been observed, 6 were felt to be improved, 9 to be unchanged and 1 worse. Of the entire group, 3 patients have returned home as fit for outside social adjustment, and 16 have been transferred to the "quiet" wards.

The changes observed do not appear to consist merely of quantitative diminution of activity, since in many instances re-direction of available "energy" in the form of productive work has occurred. With these changes a lightening of the economic and custodial burden has taken place. It may be mentioned that relatives and friends have been quick to notice changes and have indicated their approbation.

The ultimate value of this form of treatment is, of course, determined by the degree of permanence of the improvement. Periodic follow-up studies over a long period of time will be necessary. But it seems quite clear that at least over the interval studied here, changes of an ameliorative sort can be induced in this kind of patient by metrazol.

Summary.

Metrazol treatment has been carried out in a group of 42 patients (16 men, 26 women) characterized by chronic excitement over a period of 6 months to 22 years. Of these, 40 were schizophrenics and 2 chronic manics. The age range of these patients

was from 19 years to 60 years. Treatment was given daily, in dosages beginning with 3 cc. of 10 per cent solution, and terminated when further improvement seemed improbable. Such procedures as previous hydration, alkalinization and camphor-in-oil injection, advocated by Meduna and others, have been found unnecessary. It was found generally, as early effects, that there was marked general improvement after treatment; there was diminution of over-activity, over-talkativeness, aggressiveness, destructiveness and incontinence; the necessity for sedation dropped to the vanishing point; and about half the patients became capable of productive work. Open masturbation, obscenity, ready irritability, incoherency of speech and escape attempts were much diminished. Apart from the psychiatric implications of these data, the observations appear to have significance for the administrative problems involved in the custodial care of chronically disturbed patients.

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THE HISTOPATHOLOGY OF THE PSYCHOSES WITH SUBACUTE BACTERIAL AND CHRONIC VERRUCOSE RHEUMATIC ENDOCARDITIS.*

By WALTER L. BRUETSCH, M. D., Indianapolis, Ind.

The involvement of the brain during the course of an endocarditis is not uncommon and has been emphasized by Winkelman and Eckel,[1] Diamond[2] and others. How frequently the brain is involved during an endocarditis has been shown by Flater,[3] who observed on a medical ward cerebral symptoms in almost half of the patients with infectious valvular heart disease. Kimmelstiel[4] in a group of eleven patients with subacute bacterial endocarditis found on histologic examination only in three instances the brain free of changes.

The question whether the cerebral involvement complicating an endocarditis may also become the precipitating factor of a psychosis has received little attention in psychiatry. In Winkelman's and Eckel's[1] patients with endocarditis—all of whom were observed on the wards of a general hospital—there were cases which presented signs of an acute psychosis in which hallucinations, delusions, confusion, violence and delirious states were outstanding features. The thought that an endocarditis—by producing brain changes—may become the etiologic factor of a psychosis is not new and has been mentioned particularly by psychiatrists of the last century.

In the investigation of this problem from a psychiatric point of view it is important to ascertain first: in what percentage of patients dying in hospitals for mental diseases are recent or old infectious valvular changes present? In a series of 280 complete postmortem examinations, Bruetsch[5] found endocarditic changes in 18 instances or in 6.4 per cent. Syphilis of the aortic valve is not included in this figure.

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From the Indiana University School of Medicine and the Central State Hospital, Indianapolis, Ind.

Of these 18 patients 10 had endocarditis only; 6 cases had endocarditis and syphilis; one case had endocarditis, syphilis and cerebral arteriosclerosis; and one patient had an endocarditis only, but the infectious valvular changes seemed to be incidental and had apparently nothing to do with the psychosis.

In this report three representative cases of the group of ten patients who had endocarditis only, not complicated by another disease such as syphilis or cerebral arteriosclerosis, will be described. In nine of the ten cases organic lesions were found in the brain which were widespread and sufficiently characteristic to be considered the precipitating factor of the psychosis.

To the clinician the mental diagnoses in the nine patients with brain changes will be of interest. A diagnosis of manic-depressive psychosis was made in two instances; dementia præcox in four instances; involutional psychosis in one instance; senile psychosis in one patient; and psychosis with mental deficiency in one case.

From an etiologic point of view two types of psychosis with endocarditis can be distinguished. (1) Psychoses with subacute bacterial endocarditis, terminating fatally within several months. (2) Psychoses with chronic verrucose rheumatic endocarditis. In the latter group the duration of the stay in the institution varied from 2 days to 38 years.

I. Psychoses with Subacute Bacterial Endocarditis.

Case 1.—A white woman, aged 37, described by her husband as a pleasant and well adjusted personality, rather suddenly lost interest in her home affairs, refused to eat and to dress. Later she became restless and violent and imagined the neighbors were molesting her. On admission four weeks after the onset of these symptoms the patient made a delirious impression. She was confused, noisy, profane, and talked incoherently and incessantly. She tossed about in bed and required restraint.

The patient presented a "thyrotoxic appearance" with palpable thyroid and exophthalmus. There was visible cardiac pulsation, rapid pulse and a sharp systolic blow at the apex. The spleen was enlarged. There was dyspnœa and cyanosis of lips. The pupils reacted sluggishly to light.

Laboratory Findings.—The urine contained a heavy trace of albumin and many hyaline and granular casts. On admission the blood and spinal fluid were negative in all reactions, with no increase of cells and globulin.

Until her death—three weeks after admission—the patient exhibited a manic-like behavior with euphoria and flight of ideas. There were times, when she expressed many auditory and visual hallucinations and delusions of a bizarre nature.

The temperature on admission was 103° F., returning in three days to 99° F., where it remained for 10 days. In the following week, that is, the last week of her illness there was an irregular temperature between 102° F. and 104° F.

The mental diagnosis at the Central State Hospital was dementia præcox or manic-depressive psychosis complicated by thyroid disease. The family physician had suggested in the admission papers the same diagnosis and believed the heart murmur to be the result of a thyrotoxic condition.

Autopsy revealed on the mitral valve two isolated vegetations (Fig. 1). One vegetation was friable and of the size of a cherry seed; the other was smaller, firmly attached and of a greyish color. Histologic sections of the vegetations showed masses of cocci. Unfortunately, a culture from the infectious valve was not made, since all the findings were so unexpected. Judging from the morphologic appearance of the bacteria, and from the type of the histologic lesions, one is obviously dealing with a streptococcus viridans infection.

Other important findings were a marked splenic enlargement with a wedge-shaped grey infarct, the spleen weighing 400 gms., being about four times its normal size; and an embolic nephritis with several small hæmorrhagic infarctions.

The brain was swollen and over the right frontal lobe a large subarachnoidal hæmorrhage was present. Careful dissection of the brain showed nothing abnormal.

In brain sections, stained with toluidin blue, one to two miliary abscesses were seen per preparation in an otherwise normal appearing cortex (Fig. 2). The minute abscesses consisted of polymorphonuclear leukocytes with dense masses of streptococci in the centre (Fig. 3). The abscesses were frequently surrounded by a zone in which most ganglion and neuroglia cells had disappeared. In other sections miliary accumulations of leukocytes were absent, but areas of paling were present, *i. e.*, circumscribed places where all the cellular elements had been wiped out. In the centre of these areas heaps of cocci were present (Fig. 4). Under the oil immersion objective the cocci had the same morphology (Fig. 5) as those seen in the histologic sections from the vegetations of the mitral valve.

With the exception of the adrenal cortex miliary abscesses were not found in the tissue of the internal organs. This, however, cannot be interpreted as evidence that the internal organs were entirely free from such lesions. It is only an indication that miliary abscesses were rare in the organs. Cocci within vessels in larger masses or as bacterial emboli were present only in the adrenal, pancreas and kidneys.

Comment.—The question arises why only a small percentage of patients with subacute bacterial endocarditis develop a psychosis? Kimmelstiel [4] in his material, which was collected in a general hospital, reported cases of viridans-endocarditis with miliary abscesses in the brain, yet there were no mental symptoms with the exception of somnolence. It is, of course, possible that the miliary

abscesses in the cases without mental symptoms form in the brain only shortly prior to death, and the patient dies before the psychosis can manifest itself. In our case the brain bore the brunt of the infection. Due to the relative absence of bacteria and miliary abscesses in the internal organs, the patient was enabled to live longer and the brain changes possibly were given time to express themselves in mental symptoms.

Psychoses with subacute bacterial endocarditis are rarely seen in state hospitals, this being the only case among 280 autopsies.

II. Psychoses with Chronic Verrucose Rheumatic Endocarditis.

Patients with chronic rheumatic valvular disease, in whom the rheumatic infection has also involved the brain are not infrequently observed in state hospitals, if careful histologic studies of the brains of such patients are made.

The clinical and anatomical findings of two cases of this group will be described.

Case 1.—The patient, aged 47 on admission, had been happily married for 31 years and was the mother of 6 children. The father had committed suicide at the age of 73. Eighteen months ago the patient showed signs of fatigue and irritability. She appeared worried, complained of headaches and felt depressed for short periods of time. She was, however, able to continue with her household duties. The symptoms that caused her commitment to the state hospital were noticed six or eight weeks ago, when she rather suddenly became violent and required restraint. She talked continually and incoherently mostly on religion, frequently using vulgar and profane language. She was agitated and refused food and water. It was necessary to keep her in bed most of the two months. The family physician reported in the commitment papers, which were made out ten days before her arrvial at the hospital, that the patient was "physically strong and healthy." A tentative diagnosis of involutional psychosis was made.

On admission two days prior to death the patient was delirious with a temperature of 104° F. She mumbled unintelligently and gave no reply to questions. Her skin was hot and dry. Mouth and tongue were covered with a dry crust. The pupils were moderately dilated and reacted sluggishly to light. The heart sounds were distant. There were no murmurs. Pains and swelling of the joints were absent. The husband, however, gave later the information that his wife had suffered in previous years from articular rheumatism. The mother had rheumatism and one brother is a cripple as the result of rheumatoid arthritis.

The urine contained a heavy trace of albumin and many casts. The blood count was as follows: hæmoglobin 95 per cent; red cells 5,600,000; leukocytes

11,400. In Schilling's differential count were 80 per cent segmented neutrophile leukocytes, 4 per cent neutrophile stab forms, 14 per cent large lymphocytes and 2 per cent monocytes. The patient died before a blood and spinal fluid examination was made.

Autopsy revealed on an otherwise normal mitral valve a single, firm, verrucose wart (Fig. 6). Microscopically the warty vegetation was free of bacteria and consisted of newly formed rather vascular tissue in which were interspersed lymphocytes (Fig. 7), indicating slight activity.

Other important findings were an old splenic infarct and several recent and old small infarctions in both kidneys.

The brain was swollen and there was a fresh softening of the left temporal lobe and of the cortex of the left island of Reil (Fig. 8).

Histologic examination revealed the area of softening of the left temporal lobe to be due to massive confluent cellular infiltrations (Fig. 9), consisting of lymphocytes, plasma cells, granule cells and proliferated macroglia. In areas where the temporal lobe tissue was grossly still preserved the perivascular spaces were filled with lymphocytes and plasma cells. Similar perivascular infiltrations—more pronounced in some areas than in others—were present throughout the white matter of the entire brain, including the midbrain and pons. There were, however, regions of the white matter which were entirely free of these changes. The cortex was little involved. In most tissue blocks examined the cortex had a normal appearance, but there were some sections in which a few middle-sized vessels (Fig. 10) and capillaries of the frontal lobe and of other regions were surrounded by lymphocytes and plasma cells. Rod cells were absent. Acellular areas (Veroedungsherde), *i. e.*, areas where the cellular elements had disappeared, were not present. Endarteritic changes were not found. The Turnbull blue reaction for free iron was negative, eliminating the possible concurrence with general paralysis. The pia-arachnoid was normal with the exception of a few localized areas in which there were diffuse infiltrations with lymphocytes, plasma cells and acutely stimulated histiocytes.

The brain vessels were free of arteriosclerosis, and gross and microscopic signs of syphilis of the aorta and of other organs were absent.

Comment.—In this instance the causative factor of the psychosis without a complete postmortem examination would have remained obscure. The isolated verrucose vegetation on the mitral valve was not large enough to produce a murmur, and no significance was given to the history of previous attacks of rheumatic fever. The brain changes were those of an encephalitis with acute softening of one temporal lobe. The old infarctions in the spleen and kidneys suggested that the rheumatic process during previous attacks had involved mainly the abdominal organs.

CASE 2.—At the age of 6 the patient had chorea. The first mental symptoms appeared at 18, when she became seclusive and expressed delusions of perse-

cution. When 22 years old, her abnormal conduct necessitated commitment to an institution for mental diseases. In the institution the patient had episodes, when she was violent and refused food. Then there were periods, when she sat quietly on the ward, at times hiding her face with her hands or pulling her dress over the head. At other times she played the piano mechanically. There were no hallucinations. The physical condition was reported as "excellent." After three months of routine institutional care the mental condition improved and the patient was dismissed. She was re-committed six years later in an acute relapse. At this time the physical examination, besides a well compensated aortic and mitral stenosis, revealed nothing abnormal. The urine was negative. The former diagnosis of dementia præcox was confirmed by Drs. Max A. Bahr and Edward J. Kempf. The patient remained in the institution for 26 years until her death (April 1, 1935) at the age of 54, when she died suddenly from the results of chronic rheumatic heart disease.

At autopsy a far advanced mitral and aortic stenosis on a rheumatic basis was found. The mitral valve (Fig. 11) was markedly thickened and roughened, but there were no vegetations. The chordæ tendineæ were shortened and thickened. On the mitral leaflet were two large recently formed wall thrombi, a piece of which became detached and had entered the right middle cerebral artery causing sudden death. On the cusps of the aortic valve were calcified vegetations and there was thickening of the closing border. Weight of heart: 500 gms.

In the kidneys old white infarctions of many years duration were present.

The brain, aside from the acute softening of the right striate bodies due to the cerebral embolus, showed nothing abnormal.

Histologic examination, however, revealed a widespread involvement of the cortex in the form of acellular areas (Fig. 12). The acellular areas (Veroedungsherde) were particularly numerous under regions of the pia-arachnoid in which meningeal vessels showed old and recent signs of rheumatic endarteritis. In the cortex there were also connective tissue scars (Fig. 13) extending over two to three and more cell layers. The cortical scars consisted of proliferated small vessels. In addition, an occasional small granuloma composed of neuroglia cells was found in the cortex (Fig. 14).

In the grossly normal (not acutely softened) striatum a single acellular area was present.

The grey substance about the third ventricle and the structures of the midbrain, pons and cerebellum were normal.

Comment.—Interesting in this instance was the circumstance that besides rheumatic lesions of many years duration, such as the renal infarcts and some of the rheumatic endarteritic changes on the vessels of the meninges, more recent changes were seen on meningeal vessels, suggesting that the rheumatic infection in this patient was present since the age of 6, when she had chorea and that the infection at the time of death at 54 was still mildly active.

Discussion.

In discussing the part which infectious valvular heart disease may play in the causation of acute and chronic psychoses, one has to consider the question whether the endocarditic changes are mere incidental findings confined to the heart valves or whether the valvular changes are part of an infectious process, producing lesions in other organs than the heart and particularly in the brain.

In the case with the subacute bacterial endocarditis numerous miliary abscesses and foci with masses of bacteria were scattered throughout the brain cortex. The sudden onset of the mental symptoms seven weeks before death, leave little doubt that the streptococcus viridans infection was responsible for the admission of the patient to the mental institution.

In one of the two patients (Case 1) with verrucose endocarditis the etiologic relationship of the rheumatic infection to the psychosis is established with equal clarity. The patient died two months after an abrupt onset of the psychosis. At death there was an acutely softened temporal lobe and in the remaining brain signs of a rheumatic encephalitis were present.

In the last case (Case 2) the rôle of the rheumatic infection to the mental symptoms is at first sight less obvious. The psychosis in this patient began at 18 years of age and lasted for 32 years. The patient presented the picture of dementia præcox with moderate mental deterioration. One is justified to say here that the chronic rheumatic infection is in no way connected with the psychosis, because there are many individuals with a similar history of chorea in childhood and with a rheumatic heart lesion, who never develop a psychosis.

In modern psychiatry little if any significance is paid to the presence of a rheumatic valvular heart lesion or to the previous history of chorea or rheumatic fever. Histologic studies of the brains of mentally ill patients with chronic rheumatic endocarditis show, however, that in most of these cases the chronic rheumatic process has also involved the brain.

The rheumatic infection in these patients is present in a chronic form without making obvious clinical symptoms, such as elevated temperature or painful swelling of joints. At death the experienced histologist will find rheumatic changes in the brain as well as in

other organs, which are of varied age, *i. e.*, old lesions of many years standing and others of a more recent date.

That the rheumatic infection may be present throughout the life time of these patients is also shown by the mild activity in the involved heart valves of some of the cases. This was particularly well illustrated in a patient who had acute rheumatic attacks at the age of 12 and 52. The first mental symptoms appeared at 62, which led to her commitment to the state hospital with the diagnosis of senile psychosis. At death, 10 days after admission, a recent infarction of the left parietal-occipital lobe on a rheumatic basis was found. There was no syphilis nor any sign of cerebral arteriosclerosis which would account for the softening. In the thickened mitral valve besides old fibrotic changes, young fibroblasts in the stage of an amitotic cell division were seen indicating a recent flareup of the rheumatic process this time involving the brain, but giving no outward appearance of a rheumatic attack in the form of joint involvement.

The anatomic brain changes in the chronic group of mentally ill and rheumatic patients consisted of small or larger areas of cerebral infarction being the result of rheumatic-endarteritic changes. In other instances the brain was grossly normal, but histologic examination disclosed the presence of numerous acellular areas, also called paled areas, an occasional rheumatic granuloma (rare), and small connective tissue scars extending over one to three and more cortical cell layers. The rheumatic-endarteritic changes resembled those of syphilitic endarteritis. A differentiation cannot be made from the histologic appearance with certainty. Only in the light of other rheumatic changes in the body (verrucose endocarditis, splenic and renal infarctions), and by exclusion of syphilis both serologically and by the examination of the aorta can one arrive at a fairly safe diagnosis as to the etiologic cause of the vascular lesions. In one patient with a rather acute and fatal psychosis the anatomical picture of an encephalitis was present, the encephalitic changes depending very likely on different degrees of tissue immunity.

In contrast to the syphilitic encephalitis of general paralysis the perivascular infiltrations in rheumatic encephalitis were far more pronounced in the white matter and were not evenly distributed. In the cortex the inflammatory changes were scanty. In some

portions of the brain massive cellular infiltrations occurred leading to acute softening. The Turnbull blue reaction for iron was negative.

One may justly ask the question: Is the author not attaching too much importance to valvular changes found in the population of mental hospitals, and are the lesions of the heart valves not mere incidental findings? There are two arguments which speak against this assumption. In the first place, with the exception of one instance rather characteristic brain changes were present in all mental patients with endocarditic lesions; and secondly there is a marked difference in the frequency of valvular changes in the various psychoses. In the functional group (dementia præcox, manic-depressive and involutional psychoses) 8.1 per cent of the patients had endocarditic lesions, while in general paralysis in less than 1 per cent infectious valvular changes were present. (Syphilis of the aortic valve is, of course, not considered in this study.) If the valvular changes were incidental one would assume that they were equally distributed among the various psychoses. Furthermore, in the only case of general paralysis with chronic rheumatic endocarditis the patient lived for 15 years without any treatment whatsoever. Or in other words, the concurrent rheumatic infection had produced a case of general paralysis of prolonged duration. This observation lends additional weight to the argument that valvular changes in mental patients cannot be disposed of lightly. The etiologic relationship between the heart lesion and the brain changes becomes clearer when one looks at endocarditis not merely as a localized involvement of the endocardium, but as an involvement of the endothelium of the whole arterial system in the largest sense. The infective agents which produce the vegetations on the heart valves may settle anywhere on the walls of the arteries, producing there similar changes. On this basis the infarctions in the spleen, in the kidneys, and the lesions in the brain may be explained.

It is desirable to set up classifications which are as detailed as possible preferably with respect as to the fundamental process or the etiologic agent. For this reason an attempt was made to establish the etiology of the endocarditic lesions by histologic examination of the diseased valves. In the material consisting of 10 cases, only in the instance with subacute bacterial endocarditis

were bacteria present on the valves. In another instance with bacteria, subacute bacterial endocarditis was superimposed on rheumatic valves. In the remaining eight cases bacteria-free leaflets characteristic of chronic rheumatic endocarditis were found. From the study of the heart valves the impression was gained that of all types of endocarditis, chronic rheumatic valvular lesions are by far the most important ones for psychiatry, due to the frequency with which concomitant brain changes are present in these patients.

Summary.

Two types of psychoses with endocarditis have been described. 1. Psychoses with subacute bacterial endocarditis, terminating in death after a sudden onset of the mental symptoms. Histologic examination revealed numerous miliary abscesses and masses of cocci in capillaries of the brain cortex. This type is rarely seen in state hospitals. 2. Psychoses with chronic rheumatic endocarditis. The patients in this group may present any reaction type. Some of the cases were diagnosed as dementia præcox, other patients as manic-depressives or involutional psychoses. A 62-year-old patient with a rheumatic infarction of the parietal-occipital region was classified as senile psychosis. The anatomical findings in the brain consisted of small or large areas of infarction, being usually the result of rheumatic-endarteritic changes. Or the brain was grossly normal, but microscopic examination disclosed numerous acellular areas, an occasional granuloma, and small connective tissue scars. In one instance a rheumatic encephalitis was present.

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DESCRIPTION OF PLATES.

PLATE 2.

FIG. 1. Subacute bacterial endocarditis. Mitral valve with isolated large vegetations containing great numbers of bacteria. (The tear in the leaflet is artificial.)

FIG. 2. Brain cortex. One miliary abscess in second cortical layer. Toluidin blue.

PLATE 3.

FIG. 3. Brain cortex. Miliary abscess surrounded by an acellular zone. In the center of the leukocytic nodule are masses of cocci. Toluidin blue.

FIG. 4. Brain cortex. Two areas of paling in lower cortical lamina. In the centre of these areas are minute dots representing foci of bacteria which are seen under oil immersion objective in Fig. 5. Toluidin blue.

PLATE 4.

FIG. 5. Brain cortex. Masses of small cocci. In the surrounding tissue most of the cellular elements have disappeared. Toluidin blue.

FIG. 6. Verrucose, rheumatic, endocarditis. Mitral valve with isolated, warty, bacteria-free vegetation.

PLATE 5.

FIG. 7. Section through vegetation from mitral valve shown on Fig. 6. In the tissue b[illegible]s a small vessel with swollen endothelial nuclei are scattere[illegible]mphocytes. Haematoxylin-eosin.

FIG. 8. Cut through str[illegible]te bodies. Rheumatic softening of left temporal lobe and of cortex of the left island of Reil.

PLATE 6.

FIG. 9. Convolution from region of left temporal lobe adjacent to softened area. The arrow points to massive cellular infiltrations, consisting of lymphocytes, plasma cells, scavenger cells and proliferated macroglia. In the remaining convolution are marked perivascular infiltrations. Toluidin blue.

FIG. 10. Frontal cortex. Middle-sized vessel with perivascular infiltrations (lymphocytes and plasma cells). Toluidin blue.

PLATE 7.

FIG. 11. Chronic rheumatic valvular disease. There is thickening of the roughened mitral valve with shortening of the chordae tendineae. Two large terminal wall thrombi are present on the mitral leaflet.

FIG. 12. Frontal cortex. Acellular area (Veroedungsherd) extending over several cortical cell layers with a necrotic vessel in the centre. Toluidin blue.

PLATE 8.

FIG. 13. Central cortex. There is a scar consisting of proliferated small vessels, extending throughout the cortex. The lower portion of the picture shows a fairly normal cellular structure. Toluidin blue.

FIG. 14. Central cortex. Loose granulomatous (rheumatic) nodule consisting of proliferated macroglial cells in 5. cortical layer. Toluidin blue.

FIG. 1.

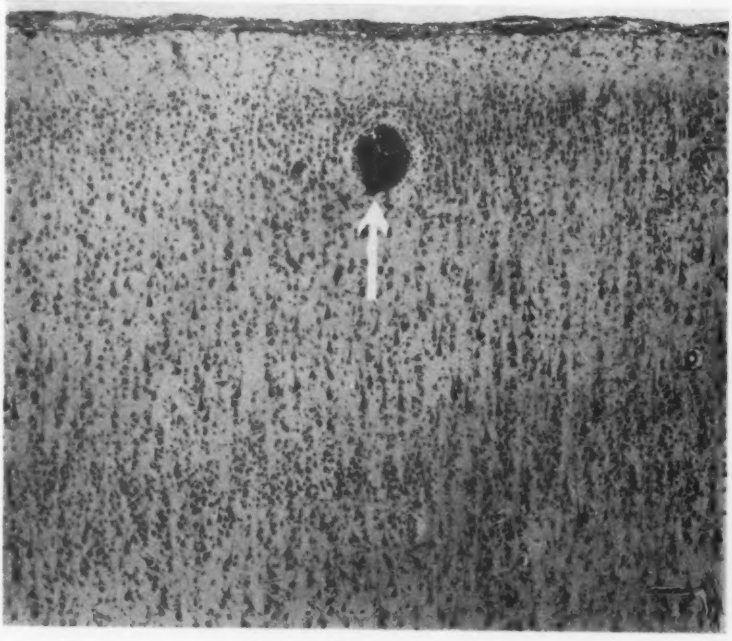


FIG. 2.

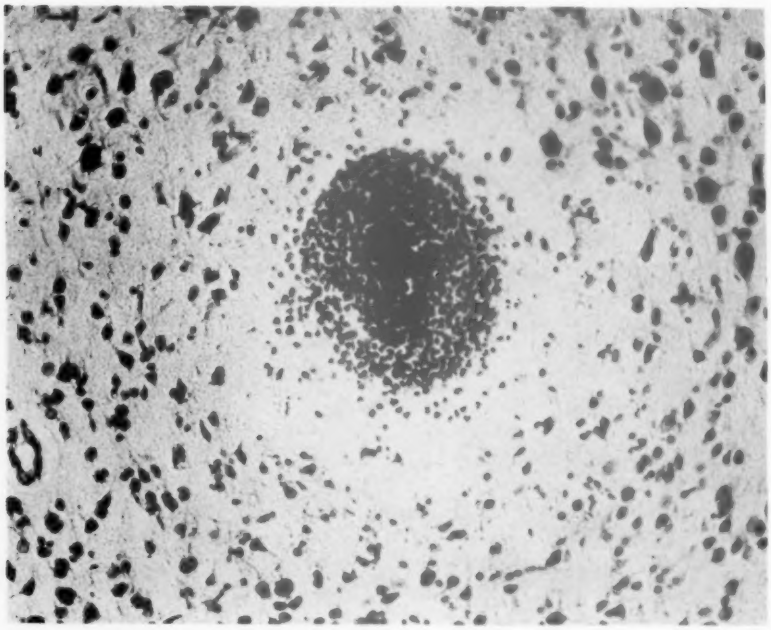
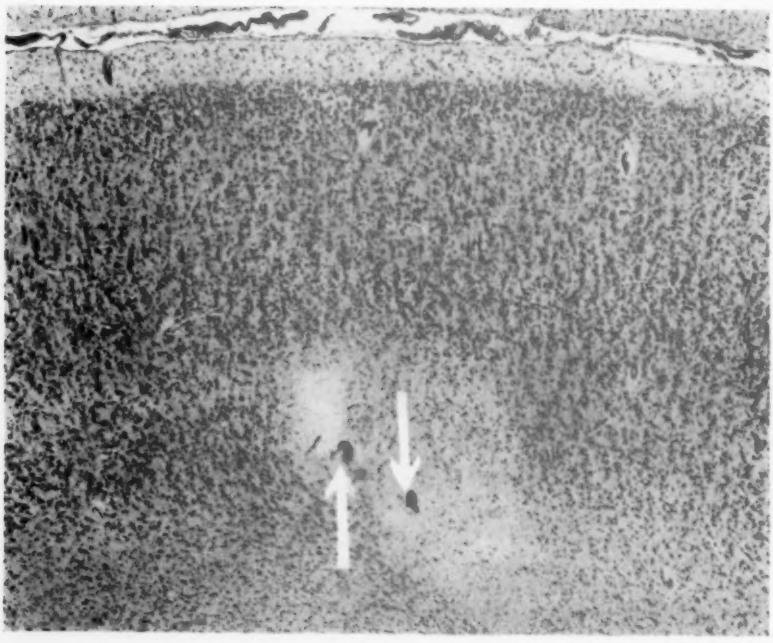


FIG. 3.



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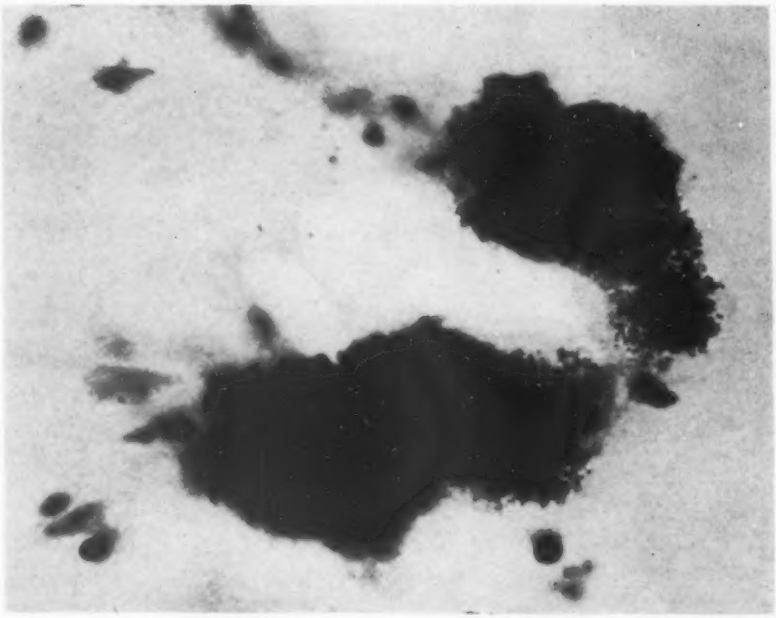

FIG. 5.

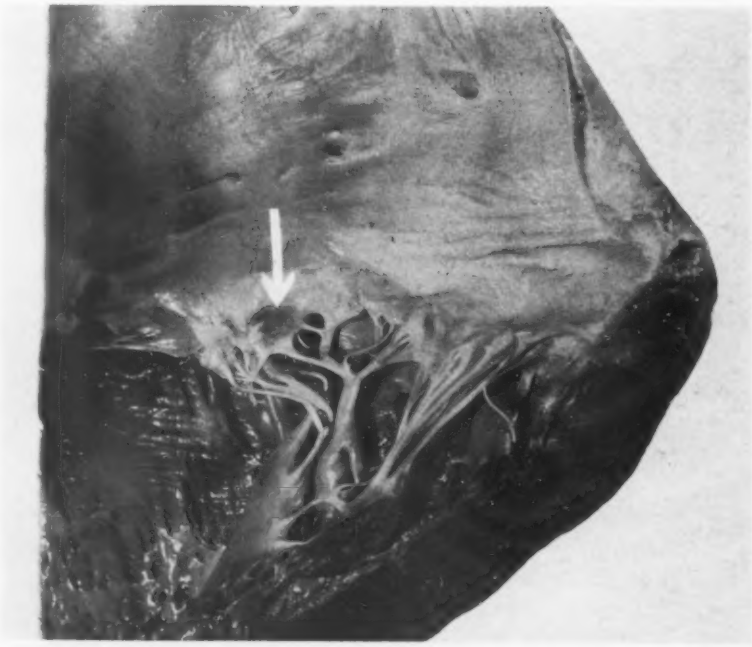

FIG. 6.

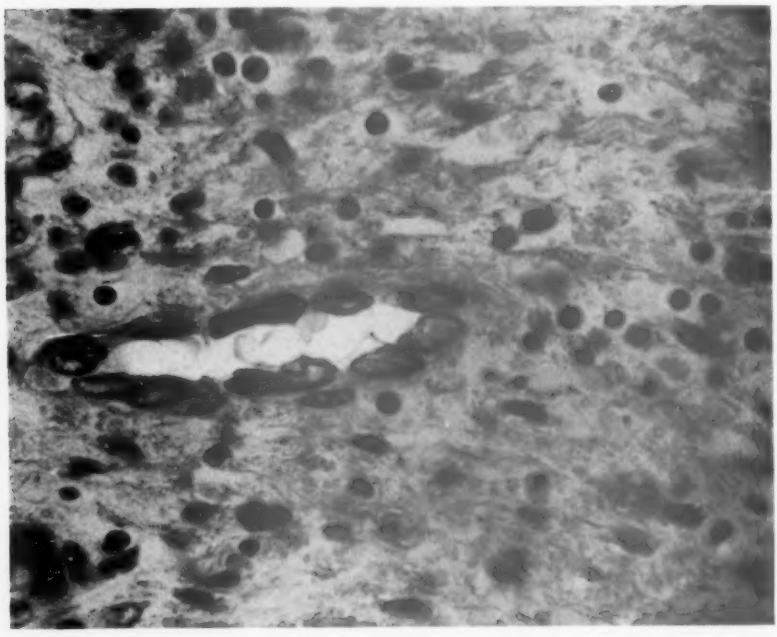

FIG. 7.

FIG. 8.

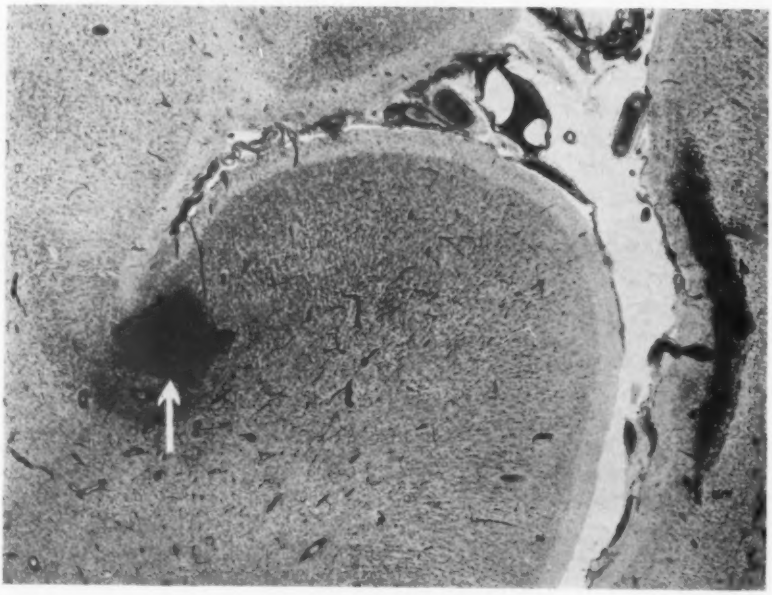

FIG. 9.

FIG. 10.

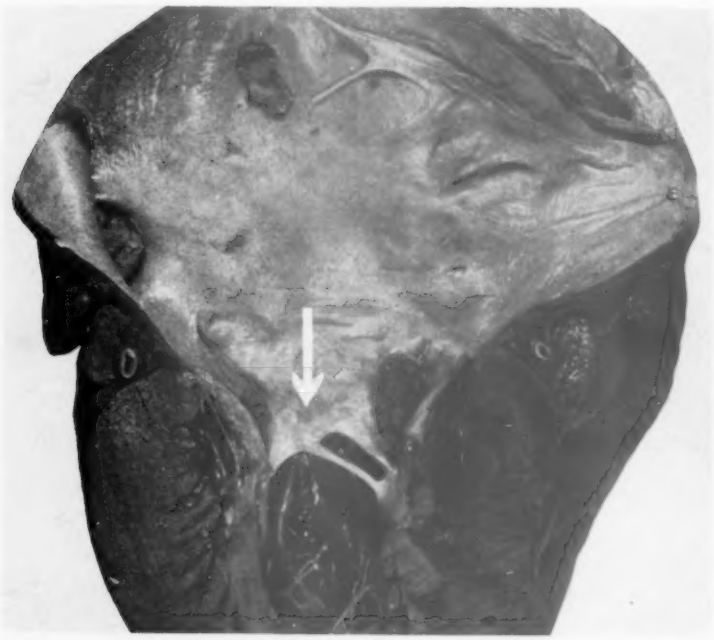

FIG. 11.

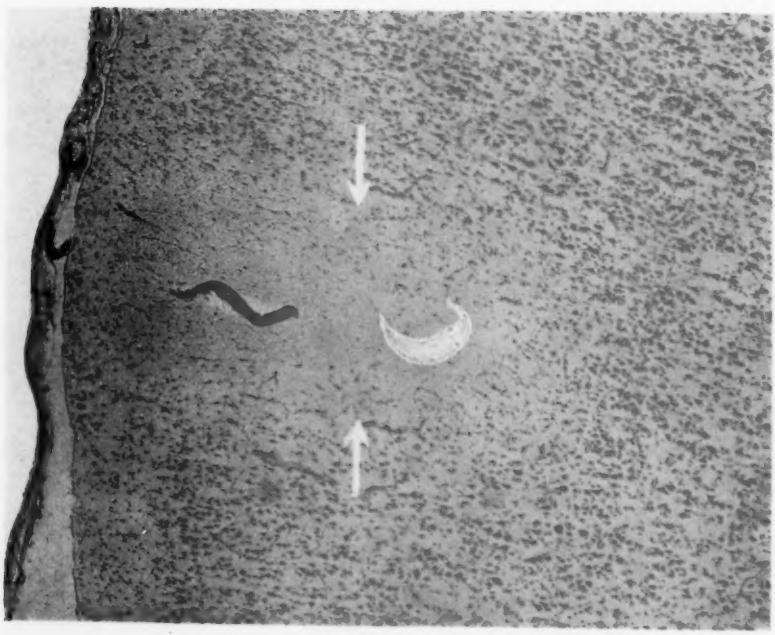

FIG. 12.

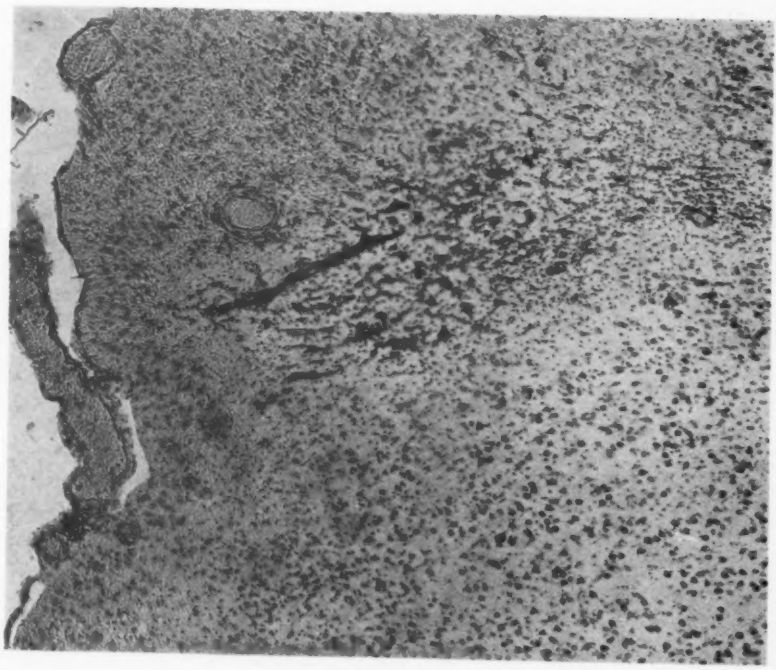

FIG. 13.

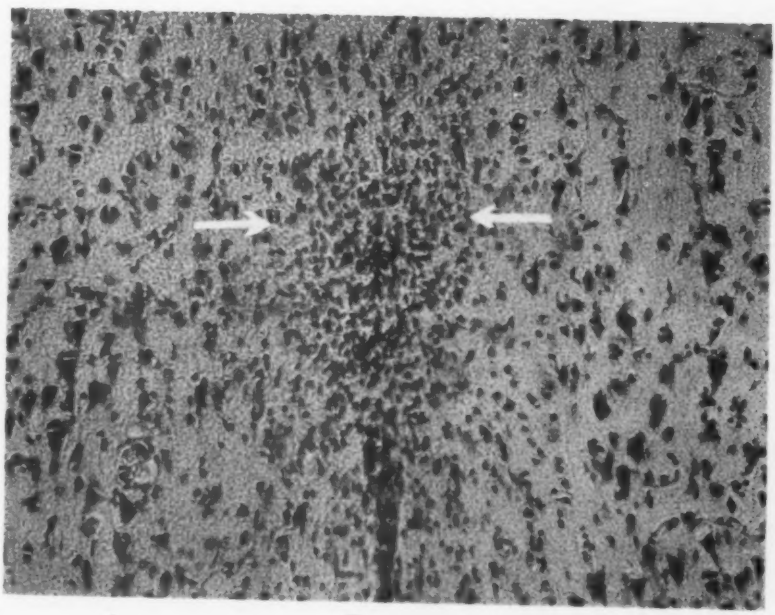

FIG. 14.

THE PRESENT STATUS OF FEVER THERAPY IN THE PREVENTION AND TREATMENT OF NEUROSYPHILIS.

By AARON J. ROSANOFF, M. D., Los Angeles, Calif.

The *spirochaeta pallida,* as all know, is a highly parasitic microorganism, being unable to survive outside the animal body for more than an hour or two. As compared with most other microorganisms, it is extremely vulnerable; and the therapeutic effectiveness of arsphenamine, bismuth and mercury is no doubt to be attributed to a special susceptibility of the *spirochaeta pallida* to these poisons. It is also extremely susceptible to heat, being destroyed by exposure for one hour to a temperature of 106.7° F.

The *therapia sterilisans magna,* hoped for by Ehrlich, has not been accomplished in syphilis; and it is important to note that the nearest approach to it is possible only in the seronegative primary stage. Thereafter, all lapse of time is attended by increasing uncertainty of accomplishing a cure even by intensive chemotherapy continued without interruption for months, years or indefinitely.

The failure of the *therapia sterilisans magna* and, in many cases, of cure by a long and thorough course of chemotherapy, is hardly to be attributed to inadequate medication. The bulk of the available evidence of the serology, morbid anatomy and histopathology of syphilis points consistently to *the development of nesting foci of spirochetes in tissues or encysted spaces which are not penetrated by the medication.* General paresis is but one of many examples of such an occurrence.

A practical point that should be stressed in this connection is that the tissue barriers which check the ultimate spirocheticidal action of chemotherapy, cannot interfere in the least with the spirocheticidal action of fever therapy. The only questions which arise are, (1) What temperatures have a spirocheticidal effect which would be adequate for accomplishing a cure? (2) Can such temperatures be safely endured for the necessary length of time by the human body?

Today the preferred—or at least the much more widely used—treatment of syphilis is by chemotherapy. As a rule, in medical practice, fever therapy is resorted to only in cases, such as those of general paresis, in which the ineffectiveness of chemotherapy has been but too well demonstrated; and even in such cases the medical profession is, on the whole, definitely on record as preferring a combination of chemotherapy with fever therapy, rather than fever therapy alone. In some quarters, indeed, there has been a tendency to dispute the effectiveness of fever as such and to attribute the recoveries in cases of general paresis, produced by malarial and other inoculations, to some obscure immunity reaction. Thus, for example, Gerstmann,[1] of Wagner-Jauregg's clinic, stated in 1925: "One thing is, however, certain. It is not the fever that can represent the essential curative factor." In the light of some newer data, both experimental and clinical, this view would no longer be tenable.

It is quite possible that further experience will bear out the view that in general paresis and in some other forms of syphilis, in which fever therapy must be resorted to, the preferred treatment would still be by a combination of chemotherapy with fever therapy, rather than by fever therapy alone. It is, nevertheless, of the greatest interest to examine available data which have a bearing on the question of the effect of fever therapy alone; and that not only in neurosyphilis, but also in syphilis in general, both early and late.

Most of the available data as to the curability of syphilis by fever are suggestive but not conclusive. An exhaustive array of the evidence need not be attempted here. Among the weightiest contributions might be mentioned those of Mattauschek and Pilcz[2] and Carpenter, Boak and Warren.[3]

About 25 years ago Mattauschek and Pilcz reported a follow-up investigation of the ultimate fates of 4134 officers of the Austrian army who had contracted syphilis. Of these, 193 (4.67 per cent) eventually developed general paresis.—Among these, also, there were 241 cases in which an acute febrile infection occurred in the early years following the syphilitic infection, such as malaria, erysipelas, pneumonia, etc.: *not a single case of general paresis developed in this group.*

Carpenter, Boak and Warren have found, in the course of their well-known series of experiments that saline suspensions of rabbit

testicle, which had been infected with the *spirochaeta pallida,* were rendered sterile by exposure to heat, as follows:

102.2° F. for 5 hours
104.0° F. for 3 hours
105.8° F. for 2 hours
106.7° F. for 1 hour

They found later, by using thermocouples to measure the temperature of the testes, syphilomata and chancres of rabbits, which had been experimentally infected and then given a generalized fever by means of radiant heat, that the organisms within the living tissues required but a slightly longer time for their destruction.

However, the experiences that have thus far been had with fever therapy alone in the treatment of human syphilis, early or late, have by no means been consistently successful; but in the reported unsuccessful cases the failures may be accounted for by certain theoretic considerations, as follows:

1. Experience suggests that the sterilizing effect of heat varies according to the medium in which the spirochetes are suspended or lodged: it is highest in saline suspensions; less high in living rabbit tissue; lowest in the human host. Accordingly, *for the securing of an adequate sterilizing effect in cases of human syphilis either higher temperatures, or longer exposures, or both, are probably required.*

2. Several years ago it was pointed out by Neymann [4] that when the body temperature has been raised by artificial means—particularly by diathermy—until the rectal thermometer registers a degree of fever that may be lethal to spirochetes within two or three hours, the temperature of other parts of the body, such as the urethra or the skin covering the penis, hands, feet, face, etc., may be much too low for the desired effect. Accordingly, *the technique of artificial fever therapy must be such as to insure adequately high temperatures and adequate durations of the exposures in all parts of the body, including the surface.*

3. It is highly probable that different strains of the *spirochaeta pallida,* as of other microorganisms, present different degrees of resistance to the sterilizing effect of heat. *This furnishes an additional reason for employing therapeutically in human syphilis either higher temperatures, or longer exposures, or both, in comparison with those suggested as adequate by the very limited experimental data of the laboratory.*

4. Very little is known of the life cycle of the *spirochaeta pallida*, but it may be judged, by analogy to other and better known micro-organisms, that the sterilizing effect of heat upon it is different in the different stages of its life cycle. *This suggests the necessity not only for adequately high and adequately prolonged therapeutic fevers, but also for their sufficiently frequent repetitions, probably at least daily, and for a sufficiently large total number of such fevers, perhaps at least 15 to 25.*

In the practical application of these principles the therapeutic requirements are such, fortunately, as to permit of a wide discretion as to the two essential factors: the height of the temperature and the duration of each daily treatment. *There is every reason to believe that daily artificial fevers at temperatures between 105 and 106° F. for four to six hours are fraught with less hazard than those between 106 and 107° F. for only two hours; yet the more moderate fevers maintained for the longer periods would undoubtedly be the more effective therapeutically.*

The most convenient technique for fever therapy would seem to be that which is based on air-conditioning. With that in view, we have arranged at our institution at Rosemead an apartment consisting of a small chamber in which the temperature may be maintained at any degree up to 143° F., controlled by a thermostat, with humidity up to saturation. The patient's body is rolled on a wheel-stretcher into this chamber, his head protruding into the room where the temperature is kept at 95° F. and the humidity at 80 per cent. When the body temperature has risen to 105° F. the patient is to be moved out into the room where the air-conditioning may be regulated so as to maintain his temperature at between 105 and 106° F. There is another room, adjoining, in which the temperature is maintained also at 95° F., but the humidity is down to 20 per cent. The patient may be wheeled into this room for a fairly rapid cooling if his temperature should rise above 106° F. A constant record of the patient's temperature is to be kept by means of a thermocouple in the rectum. A frequent check of the temperature of skin on his face is to be made with a flat-bulb thermometer.—This equipment has been but recently installed, and I hope to be able to report, after a year or two, our experiences with it.

I am firmly of the opinion that fever therapy should be employed not only in the treatment of neurosyphilis, but, as a measure of

prophylaxis against it, in all stages of syphilis. I venture to predict that it will eventually replace to a large extent, if not entirely, all chemotherapy in early syphilis. No doubt, it would take years to accomplish a crucial demonstration of its complete effectiveness. It is not easy to know, in a given case, whether the syphilis has been cured or not. Clinical manifestations may, indeed, subside, but without disposing of the possibility of latent syphilis. A negative serology would also be inconclusive, of course; and we have learned from our experience with malarial inoculation in general paresis that a clinical cure is often noted together with a positive Wassermann reaction persisting for five or more years, becoming negative eventually: *obviously the presence of dead spirochaetes may maintain for a long time a positive serology.* But when we have observed, for a period of at least twenty years, 1000 cases of syphilis which had been adequately treated in the early stages by fever therapy and have thereafter remained free from clinical manifestations and from the late forms of neurosyphilis, then we shall have proof that syphilis can be burned out.

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THE EFFECT OF ADRENALIN AND MECHOLYL IN STATES OF ANXIETY IN PSYCHONEUROTIC PATIENTS.*

By ERICH LINDEMANN, M. D., AND JACOB E. FINESINGER, M. D.,
Boston.

INTRODUCTION.

Ever since Cannon discovered the significance of the secretion of the adrenal medulla for the major emotions, such as fear and rage, numerous attempts have been made to modify the abnormal emotional state of psychoneurotic individuals by the administration of drugs affecting the autonomic system. The most recent development has been the use of benzedrine by Myerson [1] and others and the use of acetylcholine by Misch [2] and others. The therapeutic evaluation was the major feature of such studies.

More serious attempts at psychological and physiological analysis of the condition which follows in normal and neurotic individuals after the administration of adrenalin have been made by psychologists (Gersild,[3] Landis,[4] and Maranon [5]) and valuable material has been obtained concerning the variety of responses seen after the administration of adrenalin.

The present study was undertaken to compare the changes resulting from the administration of drugs, with supposedly antagonistic effect to each other, in the same patient. Our purpose was not a therapeutic investigation but, rather, an attempt to find out in what way the symptoms of anxiety, tension and the attending symptoms of autonomic dysfunction, seen in patients suffering from anxiety, might be related to the presence of either adrenalin or acetylcholine in the organism.

We chose patients suffering from anxiety, coming on in distinct attacks with relatively free intervals, hoping that in such persons

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From the Psychiatric Service of the Massachusetts General Hospital and the Department of Neuropathology, Harvard Medical School.

with unstable autonomic functions the effects to be studied might be more clearly demonstrated than in so-called normal individuals. Only after such a preliminary survey in this field will it be valuable to compare our findings with observations in normal controls.

We wanted to determine if the distribution of symptoms of distress in patients complaining of anxiety would be modified by either adrenalin or acetylcholine. We particularly wanted to know if the change in autonomic functions produced by the administration of either drug, is attended by characteristic alteration in the phenomena of anxiety or of other features in the mental condition.

In previous studies, using a series of intoxicating drugs (Lindemann [6]), attention had been called to changes in "mental reactions," namely, increased withdrawal and indifference to the "outer world" under the influence of mescalin and hasheesh, increased rapport, communication and increased interest in the outer world under the influence of sodium amytal. It seemed of interest to know if the kind of psychological change observed in previous studies was present after the administration of drugs stimulating the autonomic system.

The present study of the comparative effect of adrenalin and acetylcholine in a uniform diagnostic group might provide an opportunity to gain more insight into the quality and extent of such psychological changes.

Procedure.

We felt that it was important for us to know each patient's history, his usual complaint and behavior on the ward and the distribution of symptoms during his typical spontaneous attacks. In some of the patients this information was at hand before the experiment; in others it was obtained afterwards.

The observations were carried on in a conference room. A typist was present. The patient could not be seen by her but knew of her presence.

It was explained to the patient that he would be asked at frequent intervals during the subsequent hour to tell how he felt; that he would be given a series of different medicines which affect different parts of the nervous system in order to learn more about the nature of his nervousness. It was added that no harm would come

to him from the injections and that he did not have to expect any change from every medicine.

The patient had not had any food since the preceding evening. He reclined on a couch and received an intramuscular injection of 1 cc. of saline solution, which, after an interval of from 5 to 10 minutes, was followed by the injection of 1 cc. of adrenalin chloride or of from 5 to 25 mgs. of mecholyl (Merck: acetyl betamethyl choline). The amount of the drugs was chosen not in any fixed ratio to the weight of the patient but rather in the expectation of giving an amount great enough to produce definite changes in his condition.

The first eight patients of the series were observed while at the same time the heart rate was recorded continually by a cardiochronograph in the adjacent room. All the patients were asked to rise from the couch for two-minute periods at regular intervals. The pulse was counted at frequent intervals by hand during the standing and lying periods. (The physiological aspects of these studies will be reported in a subsequent communication.)

In order to learn about the patient's inner experience during the experiment we tried to obtain as much of verbal production as possible from the patient without modifying his responses by our actions or by leading questions. At the same time, the whole session was to be kept in the form of a conversation rather than a monotonous repetition of identical questions. We tried to standardize the procedure to some extent by choosing our questions from several distinct classes, changing the wording but sustaining the point of inquiry throughout the session. During the preliminary period we inquired about the patient's state of feelings during the last few hours preceding the experiment. For example, "How do you feel this morning in general?" or, "Is there any special sensation you have this morning?" Then several questions of the type, "Is there any change now?" were added.

During and after the injection of the drug the questions were presented at intervals of approximately one minute, slight variations being necessitated by the length of the patient's responses.

The questions may be divided into the following groups:

(a) Concerning the general condition: How are you now? How is it now?

(b) Concerning somatic sensations: Do you notice any difference in your body?

(c) Concerning the mood: How are you in your spirits? How do you feel now?

(d) Concerning the thought content: What is going on in your mind now?

(e) Questions requiring a comparison on the part of the patient of his present state with his previous experiences: Have you felt this way before?

(f) Miscellaneous questions, for instance, "Did you mean this?" when the patient's remarks have not been understood.

The questions of this last group were not considered as providing stimulation for further responses.

In addition to recording the verbal responses of the patient, observations were made of changes in the autonomic functions which could be noted without handling the patient. They refer to tremors, blushing, change in the size of the pupil, changes in respiration and in perspiration.

The material was analyzed to study the varieties of subjective distress or relief which might occur after the administration of the drug, the distribution of the somatic sensations and their relation to the specific distress which was part of the patient's illness, the distribution of the objective autonomic changes and finally the variation in the patient's "mental" attitude under the influence of the different drugs.

Observations.

The outstanding observation was that the 20 patients, whom we were able to study, could be divided almost evenly into four groups according to the way in which their anxiety is affected by the different drugs:

(a) Adrenalin reactivates a typical attack.
(b) Mecholyl reactivates a typical attack.
(c) Both drugs reactivate typical attacks.
(d) Neither drug has an effect upon the anxiety state.

In all cases the physiological phenomena of tremor and palpitation for adrenalin, of vasodilation in the face and of perspiration for

mecholyl, were noticeable, but the specific distress was related to these symptoms in different ways.

We give here an example for group a and for group b.

PATIENT I.—O. McD. A 27-year-old single man had attacks of anxiety and worry, with a tendency to depression, for the last eight years. The patient was a sensitive child and since early puberty had much trouble with masturbation and had developed "nervous spells" in which he felt worried lest he might have ruined himself by his masturbation and in which he expected to die or that something terrible was going to happen to him. These attacks were not connected in a phobic way with any special situation. He was constipated, inclined to headaches and to unpleasant sensations in his abdomen, was unable to concentrate and frequently felt he might lose his mind. He was restless and preoccupied most of the time. His anxiety was accompanied by feelings of guilt, expectation of punishment or of the consequences of masturbation. A physical examination showed a slight right hemiplegia, as a result of a birth trauma, and a right sided testicular atrophy. There was slight vasomotor instability and a tendency to bluish, cold, clammy hands.

On May 9 he received 1 cm. of saline solution at 10.58. He talked freely, and spoke of his spells of fear and hopelessness which used to come from time to time since he started masturbating at the age of 14. After 7 minutes he did not notice any difference. At 11.05 1 cc. of adrenalin was injected. After 2 minutes he started crying, "I feel a difference but I can't explain it." After 3 minutes, "All my nerves are twitching now." One noticed a tremor of his hands. He pointed to his lower back, "I am trembling right in there." He showed a coarse tremor of his hands, and became more agitated. His utterances became fragmented or were re-exclamations, "Oh Jesus, I don't know," or again, "Well, I am . . . . kind of . . . . See, I don't know how to explain it." The patient looked perplexed and worried. He repeated, "I can't explain it, I can't explain it." After 11 minutes he complained of feeling very blue and despondent, "The medicine makes me more blue. I am all jittery, it's terrible." After 14 minutes he became silent and self-absorbed. After 22 minutes he complained about the need to urinate, and felt weak, as though he were caving in. After 24 minutes he reported he had the feeling of getting smaller, shrinking. He trembled, cried, "I am getting worse, I am dying." His statements were outcries. The patient seemed to be in a state of intense distress. For the following 10 minutes there was silence with an occasional mumbling. The patient was a picture of utter fear and despair. After 39 minutes there seemed to be a little better contact. He turned to the examiner, "This is just like the spells I had just before I came into the hospital. I felt just like caving in then, too." Two minutes later he was again more absorbed, was afraid of dying and cried. He gradually became more talkative. His hands were markedly blotchy. When standing he again had the feeling of caving in. After 63 minutes he seemed more interested in things around him and less depressed. He acted as though he were shaking off a feeling of distress, "I am just feeling sorry for myself. That doesn't do me any

good. I have had an awful feeling of oppression. This closed room here makes me think I am shut up in a box all the time." He seemed more contented, and did not report any special somatic sensation except a peculiar feeling in his stomach.

The patient, who came to the session in a quiet and fairly talkative state, developed an attack of acute hopelessness with fear of approaching death. He seemed unable to formulate his report and to communicate his feelings. He appeared to be in a state of perplexity, his speech was fragmentary and there were numerous exclamations.

On May 11 the patient received 10 mgs. of mecholyl. At 10.53 1 cc. of saline was injected. The patient was mildly depressed and stated there was nothing really to look forward to, "I thought this morning my heart must be very bad." He seemed fairly contented, however. No difference in his feelings was noticed after the injection. In the period from 11.00 to 11.10 the injection of mecholyl took place. After 2 minutes the patient repeated a number of times, "My blood is surging up as though I had high blood pressure. It's hot and then cold, I feel like being in ice." Then the patient turned to the experimenter and addresed him personally, "You are getting restless, aren't you? There is a little choking." He seemed rather cheerful in spite of this unpleasant sensation. After 15 minutes he blurted out, "This is just like a cold shower." All signs of worry and depression were gone. He spoke in correct sentences without fragmentation, "I feel buoyed up now, I want to do things now. At least you have one good kind of stuff. It's just like whiskey." He reported how his friends asked him to get drunk in order to feel better. He commented on the cold sweat. He was perspiring profusely. He stated, laughing, "When I get that sweat off I will feel pretty fine. My head is clear and not melancholy at all now. It has sort of worn off." After 22 minutes he laughed and said to the examiner, "You know what you are doing, boy." The face was markedly flushed throughout the period. After 24 minutes he felt fairly happy and contented, "I got to thinking too much. I feel now as though I had a world to mself." He said, "I am not so self-centered any more. I feel I have got to think of other people besides myself." He mentioned his aunt who should come for treatment here. He continued to be cheerful and made many comments about his condition "I am not so self-centered any more. I feel as though I have got to think of other people now. We were pulling in opposite directions, the doctors and I. I feel like a pal to you now. I know all the doctors are my friends, only I did not realize it." This condition of cheerful communicativeness, free from worry and anxiousness, lasted for about 54 minutes, then one noticed again hesitation in his speech and in the next few minutes there was a remarkable change from cheerful confidence to new discouragement and retardation of speech production. "If I could only get out of here. I feel so peppy, I want to do things now. The last few days I would just stare, couldn't comprehend things. A

woman on the roof told me to come over to the side to play but . . . . I suddenly can't think any more. I wanted to end it all, that's all." Six minutes later we heard again, "I can't think of anything now. I have run out I suppose. Funny . . . . I don't . . . . just . . . . well . . . . I can't . . . . I don't know." The depressive slowness was back in full force.

The chief somatic responses to the injection were a flushed face, marked perspiration and a choking sensation. In 6 minutes a remarkable change in mood from expectation of death to confident anticipation of future activities. This change lasted for about 50 minutes and then gave way to another change with new hindrance of speech and expression. There was no anxiety connected with this experience.

In this example the reinforcement of the state of anxiety was clearly related to the experience under the influence of adrenalin.

The second type of response to be presented now was quite different.

PATIENT II.—J. U. A 42-year-old white, American, college graduate who was treated in the O. P. D. because of attacks of anxiety which had troubled him frequently during the last ten years. The attacks occurred whenever he tried to walk long distances alone, when he attempted to use a bus or train alone, when he attempted to drive the car alone. He then was seized by a sensation of panic, intense fear that his heart might stop, that he might drop dead the next moment, or that he might disintegrate in some way. He felt weak in his knees, dizzy, and had a feeling of fullness and oppression in his upper abdomen. He was keenly aware of his heart, which seemed to pound but not to race. Occasionally he broke out in perspiration. The first of these attacks occurred suddenly when he was sitting in a movie, watching a vaudeville act in which a box containing a living woman was supposedly sawed into pieces, the woman appearing without injury afterwards. At that time the patient, for a moment, thought he was going to become blind, left the theatre in a panic and for the next few weeks was in a state of almost continuous fear which gradually changed into a state of greater calm except for the situations described above. He had to give up his job, as a successful business man, and is now working on a WPA project.

The physical examination showed no abnormal findings. The neurological examination was negative. The pulse rate was at about 70, blood pressure 140/80. The vasomotor reactions were not abnormal. The hands were usually warm and slightly moist. On March 7, 1936, this patient was observed under the influence of adrenalin. At 11.33 he received a preliminary injection of 1 cc. of saline before the injection of adrenalin at 11.40. Two minutes later he asked what made the heart beat differently, "If I put the diaphragm out it seems to stop the palpitation." After 4 minutes he noticed that his hands were sweaty, "I suppose that is nervousness but there is no real difference." After 6 minutes he still insisted there was no difference in his feelings but reported

that he was quivery all over as though he were shivering when cold, "Shivering as if I were waiting for a street car on a cold night." After 7 minutes one noticed a gross tremor of his hands. After 9 minutes the patient stated that his heart was pounding and he still felt a quivering in his thighs. He had a slight feeling of insecurity in his legs. The patient did not seem anxious at all. He reminisced about former attacks of anxiety. After 17 minutes he seemed thirsty and asked for a glass of milk. Standing up he still had the sensation of shivering in the knees. From then on, one noticed that the patient was rather self-absorbed and did not talk much. After 37 minutes he became impatient, "How much longer is it going to last, Doctor? I am getting hungry." "The shivering is wearing off. The pounding is still there but not so bad." From then on he became more talkative again.

It must be noted that under the influence of adrenalin the patient reported about the typical sensations of shivering and about heart pounding, but that he had no attack of anxiety.

On April 11 he received mecholyl. During the preliminary period he stated that he felt good, noticed no difference in his feelings. At 11.32 the injection was started. 15 mgs. were injected in the course of 5 minutes. After 2 minutes the patient appeared alarmed, frightened, was restless and wanted to get up. He rose from the bed, held on to the examiner as if in a state of panic, "I feel terrible. Don't you see that I have cold perspiration all over? Must you go on?" Then he continued, "Am I going to die? I feel very uncomfortable, really very weak. Sweat is pouring all over me." The patient had a flushed face and was perspiring. Patient laughed in a curious manner several times. After 5 minutes he began to feel chilly, "I'm awfully afraid" and began to cry, "I'm soaking wet all over. My nose is running. I feel as if I had gotten a cold in a couple of minutes." After 9 minutes he continued, "This is the most powerful stuff you ever gave me. I don't want to have anything like that ever again." Turning directly toward the experimenter, he addressed him, "Why should you have inflicted this upon me? I have manifested kindness and for all the kindness I seem to get an illness and have to suffer. Look at the water coming off my body. I have a headache too." After 12 minutes the patient's panic reaction seemed to abate and he became very talkative. He kept in close contact with the examiner and continued, "Let me explain to you. When you put that needle in I don't know what happened. I worked myself up to a pitch of fear. That is the way the fear comes on me. I start thinking about it and it manifests itself. It works itself to a panicky feeling. Suddenly the fear came. All that fear came to my mind, as if something was working itself to a climax. You don't know when it is going to stop. Just panicky." The patient appeared like a person who was greatly perturbed and eagerly trying to figure out something that puzzled him. He continued, "My heart did not pound at all, yet I had that panic. Standing up I was not dizzy but weak. It was working up somehow to a peak. I wasn't going to faint. It was just a cross between panic and calm, as if you were gradually going to rise right up. This seems to be leading . . . . losing my integrity." During

these words the patient seemed somewhat hostile, "I thought you were cruel and punishing me. You are cruel. You just kept on." After 25 minutes he appeared more relieved. He began to joke, remained very talkative, reported the story of how he came to see a doctor. After 33 minutes he was somewhat more silent, complained about a chill going up and down his legs. He continued, "I think I have had all the sensations that I have had in my condition in that one medicine. There was a fear of fainting, a feeling that the heart was going to stop, a terrible panic, the feeling of alarm, the sensation of losing my equilibrium. I lost the sense of control, of contact with the world, as if something was radically wrong and it came so naturally, it came so suddenly." "I'm laboring under the idea that there wasn't any medicine in there at all. You were waiting so long. You said, 'This won't hurt.' Perhaps the response came entirely through my concentration on the needle. I was more alarmed than anything else, just like a man being blindfolded and being told he is going to be branded. Then he is touched with a piece of ice and he thinks he is branded. I think it is just because it took so long. If there was really . . . . it washes out my argument, and then the medicine did what you expected anyway." After 60 minutes the patient was more quiet. He said, "It's all over now, I guess."

A survey of this man's behavior under the influence of adrenalin as contrasted with that under the influence of mecholyl shows the following. Three minutes after the injection of adrenalin tremor, shivering and heart pounding became noticeable; the patient complained about these two types of sensations throughout most of the hour. He did not feel anxious, however. He compared the sensation with that of feeling shivery. His attitude was that of a person who is somewhat absorbed in his own experiences. His report was matter-of-fact and not much directed at the examiner. He was sparing in words and not very communicative. His reminiscences concerned earlier phases of his own illness. The experiences which took place after the administration of the drug did not carry any resemblance to the experiences connected with his attacks of anxiety.

After the administration of mecholyl, on the contrary, the patient had a very dramatic experience of an attack of panic which was identical in quality with his spontaneous attacks but more severe. The somatic responses were flushing of the face, perspiration. He also had the feeling that his heart might stop, felt dizzy and weak. His attitude showed a remarkable change. All his statements were definitely directed towards the experimenter. He scolded him, suspected him of fooling him, reasoned with him and seemed to be eagerly busy using his rational faculties in explaining the

experience to himself. It was an attitude of coping with a new experience in an active way rather than being overwhelmed by it in a passive way.

It seemed from this observation, first, that attacks of anxiety are not always simply related to the action of the sympathico-adrenal system; secondly, that the response to both drugs expresses itself in aspects of the mental condition which have to do with the patient's communicativeness and with his rapport towards the examiner.

These two examples must be sufficient to illustrate how the anxiety about which the patient complains may be related either to the symptom complex following the administration of adrenalin or to that following the injection of mecholyl.

There is, however, a group of patients in whom the typical pattern of anxiety is aroused by both drugs. There was, for instance, a man, 34, who complained about attacks of anxiety in which he became jittery, tremulous and restless. These attacks might overtake him without any provocation. He also had attacks of asthma and general nervousness. The latter developed within the last three years while the attacks of anxiety had been present from time to time ever since his puberty. Under the influence of adrenalin this patient developed a marked tremor of his head, with a sensation of pounding and pressure. He had moist hands and a sense of weakness. Under the influence of mecholyl almost the same reaction was elicited except for perspiration and some breathing difficulty. The patient was not able to relate his spontaneous attacks of anxiety more to one than to the other drug.

There was finally a fourth group which showed no clear-cut reactivation of the typical distress connected with their anxiety. The symptoms of adrenalin effect were present, also those of mecholyl effect, but no anxiety state developed. This was rather typical in a man of 24 whose fear had a distinctly paranoid coloring. He was afraid people might notice on his face the effect of masturbation and might do some harm to him. He complained about heart pounding, restlessness and uneasiness. Under the influence of both adrenalin and mecholyl he remained unperturbed and reported about his symptoms in a detached manner.

Discussion.

This review of the symptomatology encountered after the administration of the drugs in various patients must be sufficient to show that we have to distinguish two factors:

(a) The symptoms characteristic of each drug.

(b) The anxiety response which is expressed in connection with these symptoms.

A more detailed analysis as to the personality and background of the patients who responded in characteristic manner to either adrenalin or mecholyl showed the following: A marked adrenalin response was found in patients who had overwhelming attacks of distress, coming on without specific provocation and not related to specific situations or to a specific mental content. Their distress might be labeled depression, anxiety or worry. The quality of distress did not seem to make any difference, rather the absence of any rational elaboration. The attacks usually had developed plainly in relationship to sexual mismanagement, f. i. masturbation.

The markedly positive response to mecholyl was exhibited, on the contrary, by persons who had developed definite phobias and concrete fears. Their reaction was that of a panic with alert eagerness to cope with a threatening situation, in contrast to the adrenalin group where the patient was overwhelmed by an indefinable wave of distress concerning which he does not attempt any intellectual elaboration. The patients in the mixed group were individuals with a history of early instability of the autonomic system and with a trend to hypochondric ideas. The patients who did not respond with anxiety to either drug were individuals with more serious personality difficulties.

As to the distribution of symptoms produced by the drugs, it can be said that tremor appeared almost exclusively with adrenalin, substernal oppression almost exclusively with mecholyl, while heart palpitation, pounding and pressure in the head, and perspiration may be found as response to either drug. It is rather significant to realize that a complaint of heart pounding does not necessarily mean that we are dealing with a primary sympathetic stimulation.

The characteristic features of the psychological changes produced by the two drugs may be described as follows:

Behavior.—In a panic activated by mecholyl we find the person in a state of alarm with intense search for rational understanding of the causes for his state of distress. His attitude is active, his activity is definitely directed towards the observer, he is in good contact with the observer, holds him responsible for his feelings, jokes with him or is sarcastic and often suspicious.

On the other hand, the state of fright activated by adrenalin is that of surrender to an overwhelming anxiety. The patient usually lies with closed eyes. His statements are not directed towards the examiner. He often turns towards the wall and is not inclined to keep up contact with the observer.

Mood.—Under the influence of adrenalin the patient appears self-absorbed, hesitant, inhibited and quite preoccupied with his symptoms. Under the influence of mecholyl he may show a panic reaction but there is no tendency to self-absorption. On the contrary, the whole picture is that of vivaciousness, eagerness. There is occasional euphoria, relaxation and relief.

The psychological difference in the effect of the two drugs is very impressive and can be shown in all four of the groups, although it seems to be most marked in the groups which have an anxiety response to either mecholyl or adrenalin.

Speech Production.—As a rule, the patient talks little and in short and often fragmentary sentences under the influence of adrenalin. He talks in longer and usually complete sentences under the influence of mecholyl. A tendency to fragmentation, to monotonous repetition and to the injection of pauses or sudden stops in the stream of talk are rather characteristic features of adrenalin records.

The content of the various statements under the influence of adrenalin are mainly concerned with the patient's own condition, his body, his feelings, his fear.

Under the influence of mecholyl there is a greater tendency to remarks concerning the examiner, objects in the room or matters of the patient's previous life. It seems as though the patients were more inclined to keep up a certain amount of casual conversation for contact with the examiner.

A difference in word output was noticed throughout the series. Of 16 patients who received both drugs, an increase in speech production with mecholyl was shown in 15. A decrease in speech production with adrenalin was shown in 13. The speech production under adrenalin was greater than under mecholyl in only one patient. Most of the patients who showed a marked increase in word production under the influence of mecholyl belonged to the group which developed anxiety states either with mecholyl or with both. Such a group relationship could not be demonstrated for the reduction in speech under the influence of adrenalin.

This brief outline must be sufficient to give an idea of the difference in the psychiatric state of the patients under the influence of the two drugs. No attacks of anxiety were observed under the influence of saline solution. In four of the patients we were able to repeat the experiments after several months. In three of them the reaction had not changed, in one of them, who by suggestive measures had been relieved of her symptoms, the reactivation of anxiety by adrenalin which had occurred in the earlier series of tests did not happen again when the test was repeated.

Conclusions.

The modification in the anxiety state associated with the intramuscular administration of large doses of adrenalin and mecholyl was investigated in a series of 20 psychoneurotic patients. Under these experimental conditions, an anxiety attack typical for the patient was reactivated by adrenalin in six patients, by mecholyl in five patients. Both drugs reactivated an anxiety attack in five patients, in four patients neither of the drugs reactivated typical anxiety attacks.

A striking change in rapport and communication was noticed, depending upon the drug used. The anxiety state activated by adrenalin, which is often found in "actual" neuroses, is characterized by self-absorption and withdrawal. The anxiety activated by mecholyl, which is found in phobic states, is characterized by good contact, ready communication and vigorous rationalizing activity.

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DISCUSSION.

DR. HARRY STACK SULLIVAN.—There are two points that leap to my mind in this interesting report. One is a problem, namely, anxiety, and some psychiatric considerations bearing on the very finding that the doctor has reported, and the other is the general question of pharmacodynamic investigation in the field of personality theory.

Anxiety in this study is rather a broad term. I think that is entirely justifiable on the assumption that it is closely related to certain autonomic activity, but I am sure a number of the hearers noticed that the mecholyl response is more nearly related to what we would surmise to be the obsessive nervous responses, and the adrenalin response is very strikingly correlated with the people who have anxiety neurosis, whatever that is.

I want to say a little bit more about each of these. The obsessive type of person seems to the psychiatrist to interpose a certain amount of obstructing or interference in relation with other people.

The individual having the more purely anxiety-neurosis-response, if you please, shows amazingly obscure relationship to other people. I speak more from personal experience than from highly intrenched psychiatric views, but I am also quite convinced of the accuracy of what I am saying.

Now adrenalin produces in some who are neither anxiety neurotics nor strikingly obsessionists, the feeling, as they express it, "Well, I feel as if I ought to be afraid." The anxiety neurotic reports that he is terribly afraid—a classical distinction. He is convinced he is going to die; he sweats and all that sort of thing. He has anxiety, beyond a doubt.

The obsessional personality does not show that. He talks about feeling panicky, but the psychiatric picture is strikingly different.

More than half of the doctor's material shows a striking division in response to these two potent drugs. I think this is psychiatrically very exciting. I

don't know what it means. I am inclined to suggest great research in formulating to learn just what anxiety means.

I think this investigation may be the sort of investigation that may be very profitable indeed in clarifying the fact that too many things are lumped in the term anxiety.

As to the pharmacodynamic-psychiatric research, I believe the doctor has suggested some of the difficulties which are bound to be encountered, and if you will add what I have said about the type of interpersonal relation that these two suspected types of patients involved in this investigation conventionally maintain, then I think I will have suggested to you the really enormous difficulties which confront such investigations in so far as they strive to say something very simple and dependable about the human personality and its somatic equipment.

I should say that to get simple, interpretable material from an obsessional type of person would be practically miraculous. If mecholyl facilitates it, that is really quite remarkable. I would like intensely to have productions of classical patients in these two groups, the person who has no content that in any way explains the anxiety attacks but has clear anxiety attacks on the one hand, the person who is rather obsessional in dealing with all situations on the other.

I should like very much to have for scientific psychiatric study the actual productions of a typical instance of these people, the first under adrenalin and the second under mecholyl. I am rather inclined to believe that by the double approach of intensive personality study of production and the use of these potent drugs, something fairly exciting might come out. Certainly I believe that all parts of the organism that have as extended functional integrative power as the autonomic nervous system are worthy of intensive study in building up our knowledge of how people live among each other.

DR. JOHN D. BENJAMIN (Denver, Colo.).—Dr. Lindemann's paper seems to represent a big advance in the literature of pharmacodynamic psychiatry. The paper he quoted by Misch dealing with the therapeutic cost of acetylcholine in anxiety states attempted more on the basis of simple psychiatric diagnosis to show that mecholyl was valuable in anxiety neurosis. As Dr. Sullivan states, "whatever that means," has not been determined. It is used differently by different people, and has had little value for instance in anxiety occurring in the course of schizophrenic reactions, and so on.

Dr. Lindemann's presentation, on the other hand, deals with much more detailed psychodynamics of the general type of anxiety, rather than the general disease with which we are dealing in attempts to label them.

The implications, as Dr. Sullivan said and as Dr. Lindemann implied, are enormous for possibilities of future study.

The thing that seems most interesting purely from a superficial point of view is that here we have the pharmacodynamic evidence of what we know psychiatrically, namely, that anxiety is not one thing, anxiety may be different things, and different types of anxiety exist.

How many anxieties there are, where they arise, is not within the scope of this discussion, but at least it would be interesting speculation to attempt to correlate the physiological expression of anxiety with two main general types of anxiety as outlined by Freud.

Originally Freud distinguished between the anxiety neurosis and the anxiety hysteria in which he included the phobias, and still does, while Dr. Sullivan, in common with many other psychiatrists, evidently includes more—at any rate, in the obsessional compulsive group. But the more recent psychoanalytic studies, particularly by Freud, distinguish between the two main types of anxiety, the Id anxiety and the Ego anxiety. The case Dr. Lindemann referred to with the phobic anxiety represents the latter, the Ego anxiety.

The generalized cases of anxiety without obviously precipitating factors and even without specific content, appear to be more generally related to the Id anxiety, and these studies are very interesting viewed in the light, it seems to me, of the question of whether these two types of anxiety, the Id and the Ego, are the only types, whether there are other types, too, that really do consistently express themselves pharmacodynamically and physiologically in a general schematic way through different systems, nervously and physiologically.

CHAIRMAN ZIEGLER.—I should like to ask Dr. Lindemann a question or two. It is quite well known that anything which is episodic in its manifestations is difficult to evaluate. A typical example of that in the field of clinical neurology is multiple sclerosis, especially when one wishes to evaluate the therapy.

In his presentation he mentioned the fact that saline was given in analyzing the number of words which were produced per hour. I wondered if these same subjects were given the saline solution in the evaluation of other symptoms which he mentioned.

DR. JOSEPH ZUBIN (New York, N. Y.).—Was there any attempt to vary the pattern of administration of these three, the saline, the mecholyl or the adrenalin? It may be that the sequence had some effect on the general result.

DR. GEORGE F. SUTHERLAND (Ithaca, N. Y.).—Was there any attempt to identify the autonomic systems as far as the administration of atropine, say, before the adrenalin had been given, in order to knock out the parasympathetic?

You were speaking of two different types; one from the administration of adrenalin and one from the administration of mecholyl. It seems to me that the one mechanism should have been paralyzed before you could identify it, because there is always this antagonistic action which is brought into play as soon as you administer either of these drugs.

DR. ERICH LINDEMANN.—I feel heartened by the remarks of some of the discussors, and I personally feel that the point at which we are standing now is really a prelude to more work, and has a lot of loopholes. The importance

of it lies in the fact that we begin to see differences within the behavior pattern which is called anxiety, and which is placed by various experts into various personality patterns. We begin to see that anxiety is not the same thing in every person who has this complaint.

On the other hand, we see that different types of anxiety seem strikingly connected with different ways of being related to the other person. What Dr. Sullivan said in stressing the difference of the phobic type and of the typical actual neurosis, and what Dr. Benjamin said, too, appeals to me very much. I have not felt safe enough to make such correlations as yet, although it is a very appealing sort of possibility.

As to the more specific questions as to the method, which I think are very important, we had a control session with saline solution which was in every detail identical with that of the adrenalin and the mecholyl session.

We asked the patient the same series of questions, observed the behavior as carefully as after the administration of adrenalin, and did not find in our series any individuals who happened to have an attack during the saline session or had any other symptoms. We started working with controls, "normal controls" (that should be in quotation, I always feel), and in two of the members of the staff whom we examined we found a rather striking reaction with blushing and heart-pounding to the saline solution, as though the normal person might be more suggestible than the truly neurotic person, which is again a hint how careful we have to be in assuming, for instance, that the neurotic person will be more suggestible than the so-called normal person.

Then the question about the atropin. That is a rather important problem to be tackled later. It certainly is true that what we are dealing with is not simply stimulating one system, but we are pushing against the homeostatic balance in the organism.

We have started in a few cases to give atropin and give that push to the system from another angle. We also gave ergotamin to give that push to the system, and what we see so far indicates that the striking phenomena related to adrenalin and mecholyl do not occur with either one of the two paralyzing agents in these patients.

There are many points still in the method that I am rather surprised have not been mentioned, and which I would like to criticize myself before closing, and one is the matter of asking the patient questions. In psychiatric experimental work we unfortunately are not dealing with an object and with an observer, but we are dealing with a bipersonal situation in which there is a person confronting the observer, and anything we do, any slight motion we would inadvertently make, may influence the patient's response, and we have been very much aware of the fact that possibly the better contact of the person under the influence of mecholyl, might have been due to the fact that when the patient responded, the observer became a little more animated himself, and may have influenced the patient that way. We are planning to exclude that possibility by control series in which we will try to exclude the observer altogether, perhaps using a phonographic device or similar arrangement as the stimulus for the word production.

It seems to me that here we are at a point where the psychological reaction such as word production can be studied almost like a biological secretion which can be measured and analyzed as to its various components.

There is still one point about the matter of communication and contact, which I spoke of. Certainly not only the word production is significant for that. There are certain other features in the patient's behavior of which we had impressions but which we could not measure. Studying the word production is just now the most convenient inroad into that whole problem of contact and communication which is so important in psychiatry.

THE EFFECTIVE USE OF PHENOBARBITAL AND BENZEDRINE SULFATE (AMPHETAMINE SULFATE) IN THE TREATMENT OF EPILEPSY.*

By BENJAMIN COHEN, M. D., and ABRAHAM MYERSON, M. D.

Introduction.

The Grafton State Hospital receives from the other Massachusetts state institutions and by commitment the so-called insane epileptic. These patients, who represent therefore cases of very severe epilepsy, have hitherto been treated routinely by phenobarbital, receiving on an average of 1½ gr. of this drug and have also been treated with salts and cleansing enemata regularly each week. The number of attacks these individuals have and the severity and time of occurrence was recorded routinely. The number of cases, the severity and regularity of attacks and the fact that a large number had been in the hospital for over two years afforded an excellent opportunity for experimental therapeutic work on epilepsy.

The preliminary studies, which were non-productive of therapeutic results indicate the effects of prostigmin (dimethylcarbamic ester of m-Oxyphenyl trimethylammonium methylsulfate), dextrose and insulin in combination, and dextrose alone. Increasing amounts of phenobarbital, which in certain cases was combined with benzedrine sulfate (Racemic benzylmethyl carbinamine sulfate) constituted the main method used to influence the frequency of seizures.

Prostigmin was used because of its tonic effects upon the gastrointestinal tract and the peripheral musculature, and the possibility that epilepsy might be related to the activity of cholinesterase.

Insulin was employed on the basis indicated by the work of Quastel that it favorably influenced the metabolism of nerve cells in relation to the effects of barbiturates, while use of dextrose was suggested by its association with insulin.

* From the Grafton State Hospital, North Grafton, Mass., and the Division of Psychiatric Research, Boston State Hospital, Mattapan, Mass., aided by grants from the Commonwealth of Massachusetts and the Rockefeller Foundation.

Efforts were made to determine degrees of safe dosage of phenobarbital, the relationship between dosage and maximum therapeutic benefit, and the means of overcoming toxic disadvantages without modification of existing dosage of the barbiturate by the use of benzedrine sulfate.

Routine laxatives were deliberately excluded in several groups of patients and the results during periods of several months are described.

Although we originally started with small experimental groups, the number of epileptic patients steadily increased until about 150 patients were included in these studies. The therapeutic benefits have become very apparent and will be presented in detail.

Throughout the course of these investigations, except as is indicated otherwise, previously existing diets, medications and other factors remained unchanged, so that there might be no difficulty in the interpretation of findings. None of the patients received bromides or other drugs which might confuse results.

For purposes of comparing results, seizure expectancy per week for most patients was determined by adding the seizures during the years of 1935 and 1936 and dividing by the number of weeks in that period.

In the case of a small group of patients who had been in the hospital too short a time for this scheme to be carried out, the expectancy rate was arrived at by dividing their total seizures by the number of weeks of observation.

Project I.

Here are recorded the experiments which yielded negative results. They are presented because they have theoretical significance.

Three groups were included:

Group I.—These patients received prostigmin by mouth (7½ milligrams twice daily).

Group II.—These patients were given oral dextrose (15 grams) and insulin subcutaneously (10 units) twice daily.

Group III.—These patients received oral dextrose (15 grams) twice daily.

The results were as shown in Table 1 at the end of 10 weeks.

TABLE 1.

GROUP I.

PATIENTS RECEIVING PROSTIGMIN BY MOUTH (7½ MGMS. B. I. D.).

Patient.	Case No.	Seizures expected in 10 weeks.	Seizures recorded in these 10 weeks.
W. L.	3182	9	11
G. H.	4933	22	15
J. A.	6033	8	9
J. B.	5380	41	57
E. W.	5185	41	53
Group totals for 10 weeks...		121	145

GROUP II.

PATIENTS RECEIVING DEXTROSE 15 GRAMS AND 10 UNITS INSULIN TWICE DAILY.

Patient.	Case No.	Seizures expected in 10 weeks.	Seizures recorded in these 10 weeks.
J. L.	2676	15	20
J. S.	5924	82	117
W. L.	6377	8	7
H. T.	5576	16	32
F. McQ.	5554	53	39
M. I.	6123	13	10
A. P.	5571	15	29
Group totals for 10 weeks...		202	254

GROUP III.

PATIENTS RECEIVING DEXTROSE 15 GRAMS B. I. D. BY MOUTH.

Patient.	Case No.	Seizures expected in 10 weeks.	Seizures recorded in these 10 weeks.
E. C.	5585	27	21
L. S.	4779	15	67
A. G.	3792	4	7
P. C.	5791	8	12
J. G.	5316	5	5
H. E.	5520	9	9
Group totals for 10 weeks...		68	121

Project II.

(Describing strikingly beneficial results in the first two groups, and relatively negative effects in the third group.)

In the succeeding 10 weeks medications were modified:

Group I.—Except for one patient who was eliminated for lack of cooperation, the group remained intact. Another patient, with a seizure expectancy almost equivalent to that of the patient excluded, was added.

Prostigmin was discontinued and a new method of phenobarbital administration was started. Basic daily dosages of 1½ to 2 grains of phenobarbital were divided so that each patient received medication at 8.00 a. m., 2.00 p. m., and 8.00 p. m. Records were to be kept of the time of occurrence of each seizure, and each week doses were to be revised if the patient had any seizures. For example, if the seizures of the week occurred between 8.00 a. m. and 2.00 p. m. the 8.00 a. m. dose was to be increased by ½ grain. It was hoped that by this method of weekly review, medication might be suitably adjusted for the individual patient in keeping with his seizure incidence rhythm.

Group II.—One patient was excluded for lack of cooperation; otherwise the group was not changed. These patients were to receive insulin (10 units s. c.) and oral dextrose (15 grams) at 10.00 a. m. and 4.00 p. m.; also a basic total of 1 to 1½ grains of phenobarbital divided into doses at 10.00 a. m. and again at 4.00 p. m. Each week phenobarbital dosage was to be revised as for Group I patients.

Group III.—Patients not changed. Existing phenobarbital doses not modified but retained as before. These patients were to get 30 grams of dextrose orally (double previous dose) at 10.00 a. m. and 4.00 p. m.

Table 2 shows the results at the end of 10 weeks.

Summary.—Increase of phenobarbital brought about collective and individual improvement in Group I patients. The numbers of seizures expected on the basis of 1935 and 1936 incidence and the number of seizures which occurred in the preceding 10 weeks (while these patients received prostigmin by mouth) emphasize the extent of the change.

TABLE 2.

GROUP I.

WEEKLY REVISED DOSES OF PHENOBARBITAL T. I. D. (8.00 A. M.; 2.00 P. M.; 8.00 P. M.).

Patient.	Case No.	Seizures expected.	Seizures in the 10 weeks prior to this experiment.	Seizures recorded in the 10 weeks of this project.
W. L.	3182	9	11	2
G. H.	4933	22	15	4
F. S.	3794	24	37 *	5
J. B.	5380	47	57	7
E. W.	5185	10	13 †	1
Group totals for 10 weeks.		106	133	19

* This patient not included in previous ten weeks of study.
† This patient went home on visit on the seventeenth day. All computations made on that basis.

TABLE 3.

GROUP II.

INSULIN 10 UNITS (SUBCUTANEOUSLY), DEXTROSE 15 GRAMS (BY MOUTH) AND INCREASING AMOUNTS OF PHENOBARBITAL—ALL AT 10.00 A. M. AND 4.00 P. M.

Patient.	Case No.	Seizures expected.	Seizures in the 10 weeks prior to this experiment.	Seizures recorded in the 10 weeks of this project.
J. L.	2676	15	20	6
H. T.	5576	16	32	0
W. L.	6377	8	7	1
F. McQ.	5554	53	39	11
A. P.	5571	15	29	3
J. S.	5924	82	117	26
Group totals for 10 weeks.		189	244	47

Summary.—Marked benefits were noted when phenobarbital was increased and adjusted for each patient with reference to the time of the day when seizures occurred. On the basis of seizures during the preceding two years, the above group anticipated 189 seizures per 10 weeks. During the 10 weeks period while they had insulin

and dextrose 244 seizures occurred. In the succeeding 10 weeks (the period of this project while phenobarbital was being adjusted and increased), these patients had only 47 seizures although insulin and dextrose continued to be used. The improvement can be directly attributed to the phenobarbital.

TABLE 4.

GROUP III.

PHENOBARBITAL UNCHANGED. THESE PATIENTS RECEIVED DEXTROSE 30 GRAMS AT 10.00 A. M. AND AT 4.00 P. M. EACH DAY.

Patient.	Case No.	Seizures expected.	Seizures in the 10 weeks prior to this experiment.	Seizures recorded in the 10 weeks of this project.
E. C.	5585	27	21	25
L. S.	4779	15	67	52
A. G.	3792	4	7	5
P. C.	5791	8	12	9
J. G.	5316	5	5	6
H. E.	5520	9	9	3
Group totals for 10 weeks.		68	121	100

Summary.—It will be noted that although 68 seizures were expected per 10 weeks there were 121 during the period when these patients received 15 grams of dextrose twice daily and 100 in the 10 weeks when they had 30 grams twice a day. (The discrepancy between the total group expectancy and incidence was due to patient L. S. who experienced an unexpectedly large number of seizures during the period of study.) Comparison of Group III findings and those of Groups I and II further emphasize the significance of adequate and properly adjusted phenobarbital in the treatment of epilepsy.

PROJECT II.

(In which great improvement was noted.)

It becomes evident that all benefits in the previous study were directly attributable to increase of phenobarbital. Accordingly, keeping the groups (described in Project II) intact, all patients

were placed on increasing phenobarbital. Dextrose-insulin (Group II) and dextrose (Group III) were discontinued.

Comparative results, noted at the end of 10 weeks, were as shown in Table 5.

TABLE 5.

GROUP I.

Patient.	Case No.	Seizures expected in 10 weeks.	Project I seizures in 10 weeks.	Project II seizures in 10 weeks	Project III seizures in 10 weeks
W. L.	3182	9	11	2	2
G. H.	4933	22	15	4	4
F. S.	3794	24	37	5	5
J. B.	5380	41	57	7	8
Group totals for 10 weeks		96	120	18	19

GROUP II.

Patient.	Case No.	Seizures expected in 10 weeks.	Project I seizures in 10 weeks.	Project II seizures in 10 weeks	Project III seizures in 10 weeks
J. L.	2676	15	20	6	0
H. T.	5576	16	32	0	0
W. L.	6377	8	7	1	4
F. McQ.	5554	53	39	11	5
A. P.	5571	15	29	3	0
J. S.	5924	82	117	26	34
Group totals for 10 weeks		189	244	47	43

GROUP III.

Patient.	Case No.	Seizures expected in 10 weeks.	Project I seizures in 10 weeks.	Project II seizures in 10 weeks	Project III seizures in 10 weeks
E. C.	5585	27	21	25	7
L. S.	4779	15	67	52	0
A. G.	3792	4	7	5	0
P. C.	5791	8	12	9	2
J. G.	5316	5	5	6	0
H. E.	5520	9	9	3	5
Group totals for 10 weeks		68	121	100	14

Summary.—It is apparent that patients in Group I (who had adequate phenobarbital in the preceding 10 weeks) held their improvement during the 10 weeks of Project III. Since the same maintenance of benefit was noted in Group II, it seems correct to conclude that insulin and dextrose (used in Project II) had no effects upon the seizures, and that the benefits noted were due to phenobarbital alone. The remarkable improvement due to phenobarbital in Group III is noteworthy. Of particular interest was patient L. S. who was free of seizures during the 10 weeks of Project III in contrast to 52 convulsions in the previous 10 weeks.

RELATIONSHIP BETWEEN AVERAGE DAILY AMOUNT OF PHENOBARBITAL PER PATIENT AND THE GROUP TOTAL OF SEIZURES PER WEEK.

Twelve patients whose total seizure expectancy per week amounted to 32.3 were studied over a period of 30 weeks. In the first 10 weeks they received their usual amount of phenobarbital. Starting with the eleventh week, there was a progressive increase of dosage.

The group findings are shown in Table 6.

Analyzing the findings by 10 week periods the results are shown in Table 7.

Summary.—It is evident that a striking improvement (seven seizures for the group instead of the expected average of 40) was observed in the first week of readjusted medication as the average dose of phenobarbital per patient per day increased from .8 to 1.6 grains. Thereafter the patients maintained their improvement as dosage was raised but did not make significant weekly progress. These points are more evident when the three successive periods of 10 weeks are reviewed. In the first period, during which the average (pre-existing) dose of phenobarbital was .8 grain per day, the patients had 123 per cent as many seizures as could be anticipated on the basis of a two year average. In the second period of 10 weeks, with an average dose of 2.8 grains per day, they had 22 per cent of the number of seizures expected. In the third period, with an average dose of 4.1 grains per day, they had 21.7 per cent of the expected number of seizures.

TABLE 6.

Week No.	Expected number of seizures per week.	Actual number of seizures per week.	Average phenobarbital per day per patient. Grains.
1	32.3	50	.8
2	32.3	48	.8
3	32.3	38	.8
4	32.3	31	.8
5	32.3	47	.8
6	32.3	45	.8
7	32.3	22	.8
8	32.3	37	.8
9	32.3	41	.8
10	32.3	40	.8
11	32.6 *	7	1.6
12	32.6	6	2.4
13	30.4 †	5	2.9
14	28.5	2	3.0
15	28.5	14	3.1
16	28.5	6	3.2
17	28.5	2	3.0
18	28.5	15	2.6
19	28.5	2	3.0
20	28.5	6	3.6
21	28.5	12	3.8
22	28.5	3	3.8
23	28.5	12	4.0
24	28.5	3	4.1
25	28.5	2	4.1
26	28.5	5	4.2
27	28.5	6	4.2
28	28.5	7	4.4
29	28.5	3	4.4
30	28.5	9	4.4

* Two patients excluded for lack of complete cooperation; another patient added to the group (hence readjusted expectancy).
† A patient in this group was released from the hospital in mid-week.

TABLE 7.

Period involved.	Total number of seizures expected.	Total number of seizures which occurred.	Average dose of phenobarbital per patient during period studied. Grains.
First 10 weeks.....	323	399	.8
Second 10 weeks.....	295	65	2.8
Third 10 weeks.....	285	62	4.1

It is apparent, therefore (from these group statistics), that the benefits from properly adjusted dosage of phenobarbital appear early, and are not significantly extended by progressively increased dosage.

EXTENSION OF THERAPEUTIC STUDY AND GROUP BENEFITS OBSERVED.

The advantages of individually adjusted phenobarbital medication were now so apparent that it was felt advisable gradually to

TABLE 8.

93 MALE EPILEPTICS.

Number of patients in group.	Duration of treatment.	Number of seizures expected.*	Number of seizures occurred.
28	13 weeks	329	184
20	26 weeks	747 †	217
9	30 weeks	803	172
30	9 weeks	180	87
6	20 weeks	136	28
Total 93		2195	688

* Expectancy based upon seizure totals in previous two years.
† Expectancy in this group based on findings in previous four months. (These patients arrived four months before in a mass transfer from another hospital.)

51 FEMALE EPILEPTICS

Number of patients in group.	Duration of treatment.	Number of seizures expected.*	Number of seizures occurred.
19	18 weeks	622	248
21	18 weeks	623	522
11	13 weeks	82	26
Total 51		1327	796

* On basis of seizures of previous two years except for two patients who had been in this hospital only six months.

extend it to include every active epileptic in the hospital. This was eventually accomplished.

The results for patients with duration of stay in this hospital adequate to permit comparative studies are indicated in Table 8. The patients included were unselected. No patients were excluded on account of advanced age or untoward physical factors.

REVIEW OF GROUP TOTAL RESULTS.

Male Patients.—93 patients treated. Expected number of seizures, 2195; occurred, 688. Seizures reduced by 69 per cent by treatment described, and considerably reduced in severity. Incidence of accidents markedly lessened.

Female Patients.—51 patients treated. Expected number of seizures, 1327; occurred, 796. Seizures for this group reduced by 40 per cent. (However, if one atypical patient, Margaret D., who expected 317 seizures and had 402, is excluded from above group, we can say for the other 50 patients treated that 1010 seizures were expected and 394 occurred—a reduction of 61 per cent in seizure incidence.) Severity of seizures and accident incidence were also reduced for the group.

The case of Margaret D. (No. 7004) is herewith described in additional detail:

Present age, 26. She was born at full term after a labor lasting two hours. Delivery was not abnormal and developmental history not unusual. First convulsion occurred at the age of six or seven months, at that time believed due to indigestion. After a remission of two months she had fifteen seizures one night and a series every two or three months to the age of five. From then to the age of fifteen she was seizure-free. Following an attack of rheumatic fever in 1928, convulsions of a grand mal type returned, sometimes with a frequency of ten to twenty a day. From that time on she has been in several institutions, and has had as many as thirty seizures in a single day. Delirious hallucinatory states have occurred at times, and her interval conduct has been strikingly psychopathic. She had a hysterical paralysis of the left arm and leg with stocking anæsthesia in late 1937 (duration a few weeks). On each occasion diagnosis of hysteria was made by neurological consultants. During her stay at Grafton, she has had a series of grand mal convulsions, several of which have resulted in bodily injury. At such times, as much as ten grains of sodium luminal has been injected intravenously with little benefit. Her average daily dose of phenobarbital by mouth has been about 4½ grains per day and has not produced improvement. Due to the patient's lack of cooperation there is difficulty in giving her larger doses. Blood chemistry findings, urine and blood Hinton tests have been negative.

ANALYSIS OF INDIVIDUAL THERAPEUTIC RESULTS

Tables 9, 10 and 11 indicate the expected number of seizures for individual patients, the percentage incidence of seizures (as related to expectancy) which occurred during the period of study, and the numbers of patients who fit into each category.

TABLE 9.

INDIVIDUAL ANALYSIS OF MALE SEIZURES.
(Numbers in boxes below indicate number of patients in each group.)

Number of seizures expected in time studied.	Per cent incidence of seizures during study period.													
	Seizure free.	1–5	6–10	11–15	16–20	21–30	31–40	41–50	51–60	61–70	71–80	81–90	91–100	Higher per cents.
0–2	12									1	2		2	200 250 390 136
3–5	3					2	5		1	1	2			166 120
6–10	2		3				1	2		1		1		172 162
11–15			1		2	1	2	1		1	1			143†
16–20		1		2		2			1	1				
21–30			1	1			3			1				
31–40				1	2	1	1							
41–50	1		3*											
51–60					1									
61–70					2	1		1						130
71–80				1	1	1								
121–140				1		1								
141–160				1										
201–250							1							

**Example.* This means that there were three male patients who expected 41 to 50 seizures during the period of study. Instead they had 6 to 10 per cent of the number of seizures expected.

†*Example.* Here is one patient who expected 11 to 15 seizures in time studied and who had 1.43 times as many seizures as were expected for him.

TABLE 10.

INDIVIDUAL ANALYSIS OF FEMALE SEIZURES.
(Numbers in boxes below indicate number of patients in each group.)

Number of seizures expected in time studied.	Per cent incidence of seizures during study period.													
	Seizure free.	1–5	6–10	11–15	16–20	21–30	31–40	41–50	51–60	61–70	71–80	81–90	91–100	Higher per cents.
0–2	7									1				1550 690
3–5										1	1			
6–10	3			2		1	1		3					260 180
11–15	1		1		1	1				2		1		
16–20	1				2	2		1		1	1			
21–30		1	1					1						
31–40		1				2*	1							
41–50							1							107†
61–70						1								
250–300							1							
300–325														127

Example. This means that two patients who expected 31 to 40 seizures during period of study had 21 to 30 per cent of that number.

†*Example.* Here is one patient who expected 41 to 50 seizures in time studied and who had 1.07 times as many seizures as were expected for her.

TABLE 11.

EXTENT OF INDIVIDUAL IMPROVEMENT.

A. Male Patients (Unselected).

Number of patients in group.	Per cent incidence of seizures (compared to expected number).	
18	Seizure free	
1	1- 5% incidence	
7	6- 10% incidence	
7	11- 15% incidence	
8	16- 20% incidence	
9	21- 30% incidence	
13	31- 40% incidence	
4	41- 50% incidence	
2	51- 60% incidence	
6	61- 70% incidence	
5	71- 80% incidence	
1	81- 90% incidence	
2	91-100% incidence	
10 unimproved patients: 4	100-150% incidence	
10 unimproved patients: 4	150-200% incidence	Expected number seizures 1-10 per patient
10 unimproved patients: 1	150-200% incidence	Expected number seizures 1-10 per patient
10 unimproved patients: 1	250% incidence	Expected number seizures 0-2 per patient
	390% incidence	Expected number seizures 0-2 per patient

83 male patients were improved.
10 male patients were not improved.

TABLE 11.—CONTINUED.

B. FEMALE PATIENTS (UNSELECTED).

Number of patients in group.	Per cent incident of seizures (compared to expected number).	
12	Seizure free	
2	1- 5% incidence	
2	6-10% incidence	
2	11-15% incidence	
3	16-20% incidence	
7	21-30% incidence	
4	31-40% incidence	
2	41-50% incidence	
3	51-60% incidence	
5	61-70% incidence	
2	71-80% incidence	
1	81-90% incidence	
6 unimproved patients: 1	107% incidence	(43 seizures expected.)
1	127% incidence	(317 seizures expected.)
1	180% incidence	(10 seizures expected.)
1	260% incidence	(10 seizures expected; patient uncooperative in matter of medication.)
1	690% incidence	(2 seizures expected.)
1	1550% incidence	(2 seizures expected. Some of the seizures are hysterical and can be terminated by suggestion.)

45 female patients improved.
6 female patients not improved.

DEATHS IN GROUPS STUDIED.

Four patients died while under study. Their seizure totals were not included in preceding tables of results. These patients were:

M. J. S., No. 4077, female, 68 years old. Epilepsy since age of 42. Right hemiplegia for one year prior to death, necessitating continued bed care. Two seizures expected in ten weeks. Three and a half grains of phenobarbital daily. Duration of treatment 10 weeks; no seizures. Death due to bronchopneumonia and cardiac decompensation.

TABLE 12.

PRESENT DAILY DOSES OF PHENOBARBITAL (JANUARY 25, 1938) AND AGES OF PATIENTS UNDER STUDY.

PHENOBARBITAL DOSAGE.			AGES OF PATIENTS.	
Per day.	Number of patients.		Age group.	Number of patients.
½ gr.	1	(Average phenobarbital dose per day per patient, 2.9 grains.)	10-15	1
1 gr.	18		16-20	3
1½ grs.	16		21-25	6
2 grs.	26		26-30	7
2½ grs.	12		31-35	4
3 grs.	20		36-40	12
3½ grs.	11		41-45	16
4 grs.	11		46-50	34
4½ grs.	12		51-55	17
5 grs.	8		56-60	18
5½ grs.	4		61-65	12
6 grs.	3		66-70	13
6½ grs.	1		71-75	7
7 grs.	1		81-85	3
8 grs.	1			

M. B., No. 3102, female, 71 years old. Idiopathic epilepsy of 20 years' duration; extremely deteriorated. Two grains of phenobarbital daily. Death due to accidental asphyxia by food while eating. Findings confirmed by autopsy.

S. K. R., No. 3740, female, 70 years old. Idiopathic epilepsy of 67 years' duration. Generalized arteriosclerosis. Treated 11 weeks. Seizures expected, 22; seizure incidence, 0. Phenobarbital four and a half grains daily. Death due to myocardial failure. Other findings, by autopsy, essentially negative.

J. B. L., No. 2676, male, 51 years old. Under study 23 weeks. Seizures expected, 34; seizure incidence, 7. Death due to thrombosis of left internal carotid artery with left cerebral softening and right hemiplegia. Terminal bronchopneumonia. Findings confirmed by autopsy. (Other details subsequently.)

USE OF BENZEDRINE SULPHATE AS AN ANTAGONIST OF THE TOXIC EFFECTS OF PHENOBARBITAL.

During the course of treatment with phenobarbital a number of patients developed extreme drowsiness and ataxia. These patients were given supplemental benzedrine sulphate, the original dosage of phenobarbital being retained. These untoward results cleared up rapidly without unfavorable effect upon seizure incidence.

Findings were as shown in Table 13 in respect to seizure expectancy, weekly seizure incidence under phenobarbital, daily dosage of phenobarbital and effects of supplemental benzedrine sulphate upon seizure incidence.

Summary.—It is evident from the Table 13 that benzedrine did not increase the incidence of seizures, while it was being effectively used to abolish toxic effects of phenobarbital.

In the case of E. B. benzedrine sulphate seemed to diminish seizures. This patient, who is now 17 years of age, was injured by high forceps at birth and has had seizures since she was three days old. There is a history of right hemiplegia at the age of two years. Permanent hypertension of the right wrist with flexion of the fingers and a Babinski reflex on the right confirm presence of disturbance on the left side of the brain. In the six months prior to the onset of this study, this patient averaged 15.9 seizures per week, many of which were Jacksonian in type. As the phenobarbital dosage was raised, she averaged 6.9 seizures a week (over a period of eleven weeks). At a dose of 5 grains of phenobarbital she displayed drowsiness and a staggering gait. With the dose of phenobarbital remaining unchanged, she was given benzedrine sulphate 10 mgms. per day over a period of eight weeks. During the time, toxic effects of phenobarbital were relieved and she averaged 1.7 seizures per week. In the next seven weeks the benzedrine was increased to 20 mgms. per day (10 mgms. at breakfast and 10 mgms. at noon). During that time she has been free of seizures.

TABLE 13.

RESULTS OF COMBINED PHENOBARBITAL AND BENZEDRINE TREATMENT.

Name of patient.	Sex.	Seizures expected per week (estimated).	Daily amount of phenobarbital.	Seizure incidence on a week-by-week basis (adequate phenobarbital).	Effects of benzedrine upon seizures to 2/11/38 (week-by-week records).		
					5 mgms. daily.	10 mgms. daily.	20 mgms. daily.
C. L.	M	0.4	2 grs.	1-0-0-0-0-0-0-0-1-0-0-0-		0-0-0-0-1-0-0-	0-2-0-0-0-0-0-0-
J. B.	M	4.1	6½ "	1-0-0-3-2-0-0-0-0-0-3-		1-0-0-0-0-1-1-	0-0-0-0-1-1-0-
F. McQ.	M	5.3	3½ "	0-0-1-0-1-1-1-0-1-0-		0-0-	1-0-0-0-0-0-1-
A. P.	M	1.5	3½ "	0-0-0-0-0-0-0-0-0-0-		0-0-	0-0-0-0-0-0-0-
W. L.	M	0.8	5 "	0-1-0-0-1-2-0-0-0-0-		0-0-0-2-0-0-0-	1-1-0-0-1-0-0-
E. B.	F	15.9	5 "	14-9-22-4-9-2-16-		5-0-1-6-0-0-2-0-	0-0-0-0-0-0-0-
C. Co.	F	1.9	1½ "	0-0-0-0-0-1-0-0-		0-0-0-0-0-0-0-	0-0-0-0-0-0-0-
E. H.	F	1.8	2 "	3-0-1-1-0-1-0-0-		0-1-1-	0-0-1-0-0-1-1-
A. F.	F	0.7	4 "	0-0-0-6-2-1-0-		0-1-0-0-0-0-0-	0-1-0-0-0-0-0-
M. F.*	F	2.4	3 "	2-0-2-0-0-0-8-1-7-			14-7-0-6-2-0-0-
C. L.	F	0.7	1½ "	1-0-0-0-0-0-0-0-0-0-0-	0-0-0-0-0-		
L. M.	F	0.9	2 "	0-0-0-0-0-0-0-	0-0-0-0-0-		
C. Ca.	F	1.8	4½ "	0-5-0-1-0-0-0-1-0-0-0-	0-1-2-0-0-		

*This patient has syphilitic meningo-encephalitis.

TABLE 14.

URINARY AND (FASTING) BLOOD FINDINGS (BLOOD SUGAR, NON-PROTEIN NITROGEN, AND CREATININE) IN PATIENTS RECEIVING BENZEDRINE.

Name of patient.	Sex.	Urinary findings.	Fasting blood findings (mgms./100 cc.). Blood sugar.	N.P.N.	Creatinine.
C. L.	M	Negative	60	33	1.2
J. B.	M	Negative	80	30	1
F. McQ. ...	M	Negative	80	30	1.2
A. P.	M	Negative	60	27	1
W. L.	M	Occasional white blood cell.	80	30	1.2
E. B.	F	Negative	50	24.7	1
C. Co.	F	Occasional cast; few WBC.	75	34.7	1.4
E. H.	F	.2 per cent sugar.....	80	25	1.1
A. F.	F	Negative	70	27.3	1.3
M. F.	F	Negative	55	27.4	1.3
C. L.	F	Slight trace of albumin; 10 WBC/hpf	60	30	1.3
L. M.	F	Negative	70	27	1
C. Ca.	F	Very slight trace albumin; few WBC	78	34.5	1.5

NORMAL VALUES.

Blood sugar.....	90–129 mgms./100 cc.
Creatinine	1– 2 mgms./100 cc.
Non-protein nitrogen.....	25– 35 mgms./100 cc.

Summary.—It is evident that in those cases where toxic findings developed in consequence of phenobarbital that there were no constant urine findings or abnormal blood sugar, non-protein nitrogen or creatinine levels during the period of supplementary medication with benzedrine sulphate.

TABLE 15.

BASAL METABOLISM, PULSE, AND BLOOD PRESSURE FINDINGS AT TWO-WEEKS INTERVALS OVER A PERIOD OF SIX TO EIGHT WEEKS IN PATIENTS RECEIVING BENZEDRINE (PHENOBARBITAL DOSAGE HELD CONSTANT).

Name of patient.	Basal metabolism				Pulse rate.				Normal.	B. P. readings.			
	1st	2d	3d	4th	1st	2d	3d	4th	B.P. range.	1st	2d	3d	4th
C. La.	−11	+15	−7	−4	68	68	62	60	145/95	144/96	140/110	118/80	144/98
J. B.	+22	−11	−11	+5	80	72	86	80	110–18/70	104/60	124/80	100/70	114/78
F. McQ.	Not coop.	−4	−4	+12	92	70	78	80	100–105/60	88/54	120/86	104/75	104/62
A. P.	+15	−19	+15	+5	88	76	80	70	115–18/80–90	104/80	120/80	88/60	94/65
W. L.	−7	−20	−17	−20	74	72	82	68	125–30/75–80	125/85	140/100	122/95	112/72
E. B.	−5	+2	−9	−8	88	72	92	84	100/70	104/65	110/68	90/60	94/60
C. Co.	−20	−9	+5	−11	64	78	68	72	110–40/70–80	122/88	130/78	110/62	98/80
E. H.	Not coop.	Not coop.	Not coop.	Not coop.		96	102	88	110–15/70–75	80/50	Not coop.	115/75	104/65
A. F.	−15	−11	−16	−12	100	76	94	72	110–25/70–80	104/70	124/78	94/72	118/60
M. F.	+4	−10	+4	−2	104	74	74	66	100/50–60	98/70	104/70	100/78	98/78
C. Le.	−10	−18	−8		80	84	70		135–45/80–90	130/90	122/85	150/90	
L. M.	+12	+3	−4		72	86	70		130–40/80	130/85	114/60	118/55	
C. Ca.	−7	−10	−15		76	76	80		120–50/90	130/70	112/78	148/90	

Summary.—It is observed from the above table that during the period of benzedrine sulphate medication, there were no characteristic basal metabolic, pulse or blood pressure fluctuations.

There was one death in cases of patients receiving benzedrine.

J. B. L., No. 2676, age 51, idiopathic epilepsy of 45 years duration. Usual blood pressure readings $\frac{100\text{-}135}{60\text{-}75}$ Four urine reports negative. Physical findings negative. Typical seizure characterized by the following: patient started off by walking about the ward as though he were intoxicated; typical

grand mal seizure ensued, sometimes accompanied by vomiting; duration of seizure about three minutes.

Seizure Record.—From 1933 to 1936 he averaged 70 to 84 seizures per year (expectancy: 1.5 seizures per week). In the first 10 weeks of treatment he had six seizures. Then phenobarbital was gradually raised to a total of four grains daily. In the second 10 weeks he had no seizures. To relieve ataxia and drowsiness which appeared he was given benzedrine sulphate in doses varying from 10 to 20 mgms. daily starting November 10, 1937. These untoward findings were completely relieved and there were no seizures. On November 27, 1937, he started falling in what appeared to be an epileptic seizure, but was caught before striking the floor. When he failed to recover consciousness in a half hour physician was called. Findings were as follows: pupils dilated, eyes rotated to left, flaccid hemiplegia on right, Babinski reflex on right, normal plantar reflex on left, blood pressure 118/72. Patient failed

TABLE 16.

	Weeks of this study.	Usual expectancy per week.	Number of patients.	Average total incidence per week in control period (adequate phenobarbital).	Average total incidence per week during study period.
Group I	11	25.5 seizures	20	7.4 seizures	*5.7 seizures
Group II	15	7 seizures	6	1.4 seizures	1.5 seizures

* Three enemata were given two patients to relieve abdominal discomfort in the fourth week of study.

to recover consciousness, developed bronchopneumonia and died December 9, 1937. Autopsy disclosed thrombosis of left internal carotid artery and branches and extreme general brain softening on left. Since benzedrine sulphate is not known to cause thrombosis, it is unlikely that the effects noted here can be ascribed to the drug.

THE EFFECTS OF ABOLISHING CATHARTICS AND ENEMAS (PHENOBARBITAL DOSAGE CONSTANT).

In accordance with long established custom, epileptics on several of the services have been routinely given magnesium sulphate twice a week for catharsis and enemata were administered frequently.

To test the value of these routine procedures two groups of patients were selected and laxatives, intestinal lubricants, and enemata were excluded. Phenobarbital doses were maintained unchanged to allow comparison. The results are as shown in Table 16.

It is evident that in the groups studied that these patients, who were receiving adequate phenobarbital, sustained no disadvantages when laxatives were abruptly stopped for periods ranging from two to three months.

Summary and Conclusions.

1. The following are ineffective in the treatment of epilepsy:

a. Prostigmin (15 mgms. daily).

b. Dextrose (15 gms.) and insulin (10 units) twice daily.

c. Dextrose alone (30 to 60 grams daily).

2. Phenobarbital in adequate dosage adjusted individually with reference to each patient's seizure rhythm produced the following results in epileptics, many of whom had been previously considered receiving routine adequate treatment:

a. Male Patients.—Total seizures reduced by 69 per cent. Ninety-three patients treated, of whom 83 patients were improved. Sixty-seven patients showed 50 per cent reduction of seizures or better.

b. Female Patients.—In a group of 50 patients, 45 patients were improved with a total seizure reduction of 61 per cent. Thirty-four patients showed 50 per cent reduction of seizures or better.

3. Benzedrine sulphate proved specific in the treatment of ataxia and drowsiness which developed in fifteen patients in the course of phenobarbital medication. In thirteen cases findings were reviewed in detail. The dosages of benzedrine used were 5 to 20 milligrams a day, most of the patients receiving the latter amount. These additional factors were noted:

a. Benzedrine permits the retention of effective doses of phenobarbital otherwise impossible.

b. It does not cause increase in the number or the severity of epileptic seizures; instead it appears to exert beneficial effect in these respects in some cases.

c. It has no apparent effect upon blood sugar, non-protein nitrogen or creatinine.

d. Used orally in doses of 5 to 20 mgms. daily it does not appear to have significant effects upon basal metabolism, pulse rate or blood pressure.

4. Emphasis is directed to the clinical efficiency and apparent safety of adequate phenobarbital in the treatment of epilepsy. Seventy-two of our patients are receiving three or more grains of phenobarbital daily without disadvantage. In addition to marked reduction in the number of seizures, other benefits were noted: striking diminution in the severity of seizures, lessened incidence of accidents, and improvement in the behavior of the patients.

5. Present findings suggest to us that there is no necessity for routine catharsis in the treatment of epilepsy, when phenobarbital dosage is adequate.

6. Group therapy, with weekly review of results and individual changes in medication, necessitated by seizure incidence and rhythm, has proven definitely satisfactory in the treatment of the epileptics at the Grafton State Hospital. Organization of patients simplified procedures, facilitated comparative studies and effected clinical results of a very satisfactory nature.

Acknowledgment is made of the valuable cooperation given by Dr. Nathaniel Showstack (of the Grafton State Hospital), who supervised the treatment of some 40 epileptics in the medical infirmaries. His results, obtained by identical methods of treatment, are comparative to ours and are incorporated in this paper.

OBSERVATIONS ON CONFABULATION.

By H. W. WILLIAMS, M. D., and CHARLES RUPP, M. D.,
State Hospital, Howard, R. I.

Confabulation as an associated symptom is often found in cases of psychosis, in which loss of memory on a structural basis is a prominent feature. This association with memory loss is, however, variable. There are many cases with marked memory loss in which confabulation does not occur. In an effort to determine what factors condition the presence or absence of confabulation this investigation was undertaken.

A review of the available literature on confabulation reveals two general approaches to the problem. One group of authors has sought to explain the mental symptomatology of the Korsakow syndrome in its entirety. Thus, Tiling regarded the syndrome as an inherent reaction of the brain made manifest by the selective action of the alcohol. Bonhoeffer demonstrated that the syndrome was not caused by alcohol alone, but may be seen following such infections as influenza and typhoid fever, after brain trauma and as a complication of brain tumor. He considered a lack of initiative, an impairment of perceptual function, and lability of affect of causal significance. He observed that patients did not regress in spite of the memory loss and succeeded in demonstrating vestiges of memory for the period of the retrograde amnesia. Though new experiences were not retained, he believed they were, nevertheless, integrated to some degree into the personality structure.

Gregor and Liepmann regarded the particular memory disturbance as the pivotal alteration in the syndrome. Grunthal and Bürger-Prinz thought that the disordered apperception was of prime importance. Van der Horst rejected the conclusions of the abovementioned authors. It was his opinion that none of these explanations was adequate to account for the development of all the symptoms of the Korsakow syndrome. He postulated as fundamental, a disturbance of time sense, an inability to correlate experiences in terms of time relationships. Lacking such ability an individual must have memory deficits, he maintained.

In relating this finding to confabulation, Van der Horst likened confabulation to phantasy. In phantasy, he reasoned, time as such plays no rôle. Individuals with a disturbed perception of time may be expected to confabulate. The confabulated material was thought to bear a similar relationship to personality structure as does dream material.

Those authors writing from the other approach have separated the phenomena of confabulation from the syndrome in its entirety and attempted to formulate an explanation for this particular symptom. Shröder was of the opinion that the retention difficulty and retrogressive amnesia induced confabulation. Aschaffenburg looked upon the confabulations of patients of the senile group as the resultant of the suggestive wording of questions rather than spontaneous productions. Pick placed the emphasis on the greater responsiveness of these patients to suggestion. He distinguished between the exigency and the disposition to confabulate. The exigency he postulated as a necessity to fill the memory gaps; the disposition to confabulate as conditioned by the greater suggestibility of the patient. This, in turn, was dependent on the clouding of consciousness, the impaired judgment and the enhanced phantasy.

Körner in discussing the development of confabulation, like Pick, stressed the increased suggestibility of these patients. In addition, he contended that these individuals retained their responsiveness to the stimulation of the interpersonal interrelationship of others. Colloquially expressed, they retained their ability to "put on a front." The expression of this responsiveness was indiscriminating and injudicious. The modified suggestibility was thought by Körner to depend on the loss of spontaneity, the impersonal attitude to past experiences. Also of significance to him in this connection was the faulty capacity to evaluate complex perceptions occurring spontaneously or otherwise, to associate these and make them a part of their thinking.

Procedure.

For the purpose of our investigation, a short battery of test questions was improvised. These questions, about 50 in number, were simple in nature and as far as possible were framed so as to avoid suggesting the answer. Salient facts regarding birthplace, parents,

school, marital and occupational experiences revealed the integrity of the patient's memory. Orientation was briefly determined. Confabulatory tendencies were elicited by questions inquiring about the patient's activity and experiences for the period of amnesia. The questions were sufficiently general to be applicable in any given case. To allow for individual variation, specific questions applicable to the particular case were usually interpolated.

The sequence and content of the questions in each case were kept as constant as possible. The patient's responses were recorded verbatim. Tests were made as often as twice a week, depending on the degree of flux of the clinical picture, over a period of several months. Fifteen cases were utilized for the purpose of this study, of which 13 were males, two females. Seven of these confabulated. Of the total group, nine patients were classified as Korsakow's psychosis, one as psychosis with cerebral syphilis, one as psychosis with intracranial neoplasm, three as psychosis with cerebral arteriosclerosis and one as general paresis.

Results.

Development of Confabulation.—From our observations the development of confabulation seems to be the consequence of the interreaction of several factors. It would appear to be more than mere summation of these factors. They vary in value from case to case. In a given case, they react to a varying degree of their potentiality to form a resultant—namely confabulation.

A basic factor in the development of confabulation is the memory disturbance. This has the character of retrogressive amnesia as has been repeatedly pointed out in the literature. It is, however, not merely the existence of retrogressive amnesia but the scope of the same which is of significance.

It does not seem possible to express the scope of the amnesia in factual terms and resort must be made to relative terms. The involvement of memory must be of such degree that recent memory is more or less completely disturbed. None of our patients in the early phases of illness was able to recall spontaneously or otherwise, recent experiences. The remote memory for events of their youth, facts pertaining to family statistics and the like were retained in all those patients who confabulated. Their memory loss

was not complete for their memory was relatively intact for at least the first decades of life. Patient C. S., for example, could accurately describe streets and peculiarities of the town of his youth. He could correctly name and locate the two quarries his father worked at and retained comparable knowledge which could be checked. Patient C. A. S. was able among other things to tell of his marriage in 1901, the facts about the birth and death of his son, the circumstances surrounding his divorce occurring soon after marriage. Patient T. J. P. had no difficulty in playing cards and checkers. He had been very capable at checkers since his youth. He retained this ability for he consistently beat the best players on his ward.

If the remote memory is almost or completely destroyed, confabulation seemingly does not occur though other pertinent factors for the development of confabulation are present. Thus, in A. S., an alcoholic psychosis, the memory loss was complete. He was unable to give pertinent data about his family. He was, in comparison to T. J. P., unable to play cards accurately though he spontaneously made the attempt. Confabulation could not be elicited in this case. We met with no confabulation in those individuals with extensive remote memory loss.

In addition to the retrogressive amnesia, lack of insight is necessary to the development of confabulation. Our patients would consistently relate week after week that their memory was as good as ever or the equivalent. With the development of insight, on the other hand, confabulation disappeared. Case H. L. developed insight in some unexplainable manner after about six months in the hospital. From then on, it was impossible to elicit confabulation. His most characteristic remark thereafter was, "To be frank with you, I don't know." Case T. J. P. first indicated insight to the capable attendant who gave him intensive personal care. He remarked spontaneously to him that he felt as though he had been living a dream, that he had not known whether he was "coming or going." He soon thereafter stopped confabulating when talking with the attendant. It was some weeks later, however, before he expressed insight to the physician who had been examining him twice weekly. With the expression of insight to the physician, he likewise ceased confabulating to him.

The interreaction of memory involvement and the lack of insight is not adequate to evoke confabulation. The other requisite factors pertain to the personality organization of the individual. In the first place, the framework of the personality organization seems to suffer little or no insult. To sufficiently provocative external stimulation, these patients respond in strict accordance with the pattern of their individuality. Their habitual response to social or group living seems to be in no way impaired. The intensity of stimulation necessary to evoke this habitual response must, however, be greater. Left to themselves, they are apt to display lack of initiative and a degree of indifference to the routine stimulation of the ward. Under such conditions, T. J. P. would doze or gaze indifferently out of the window. However, as soon as he was addressed directly he would respond with great animation, interest and pleasure in his own characteristic way. His reactions during the frequent visits of his family were to direct observation and in the opinion of the family the same at the height of his illness as before his illness and after recovery. As he improved he could participate more actively in the conversation seemingly because of his better retention and recall. This observation led us to surmise that the apparent lack of initiative and the indifference were dependent directly on the poor retention of impressions of the life flowing around about him.

The fact that the framework of the personality structure suffers little or no damage threw into relief the importance of the personality organization for the development of confabulation. Not only seemingly must the personality structure be relatively intact but it must also be of a particular pattern. To define personality patterns and to convey a clear conception of the same is notoriously difficult. Relying almost entirely on observations, we came to believe these individuals had distinct tendencies toward introversion. Introverted is used advisedly rather than schizoid in that we saw little evidence of autism or ambivalence. They were introverted in the sense that they were persons who had great resistance to imparting to others their innermost thoughts. It is as though they had built an impenetrable barrier about the core of their personality. Confiding or philosophizing about themselves would in their opinion be the epitome of weakness. They were individuals who were incapable or unwilling to observe themselves objectively. They had

an exaggerated tendency to self deception, at least to the extent that this tendency permitted verbalization.

As they exhibited introversion tendencies, so also did they display extroversion tendencies. They are superficially very sociable, the sort of persons who can strike up a conversation with a stranger readily, who will actively participate and relate their varied personal experiences but in the vein as though they were observers to the events. Contacts with others is at the level of happenings, experiences and facts but not at a level of attitudes, hopes, aims and ambitions. They are realists. They are at the same time a hale-fellow-well-met and a lone wolf.

As an overtone to the above tendencies, these individuals externalized no concern with the body. In this respect, they may be thought of as representing the opposite extreme to hypochondriasis. In life they would tend to shrug off body complaints with remarks such as, "That's nothing," "Why bother?" As a group they tended to show disregard of many body needs. They were inclined to go to any extremes in any endeavor. Working continuously 24 hours or 48 hours was to these individuals a lark. In like fashion, they were not adverse to subjecting the body to abuse as for example with alcohol.

With the development of impaired memory, such individuals are thrown into a dilemma to retain that precision of balance they have valued between tendencies toward extremes of introversion and extroversion with their overtone of indifference to or rejection of body consciousness. They solve this dilemma by confabulation.

It is recognized that the above delineation of personality pattern is at the same time both crude and controversial. In this preliminary summary of our observations we are more concerned in presenting our belief that the nature of personality structure has a definite valence in the development of confabulation than in defining that structure explicitly, fully recognizing the difficulties of doing so. Possibly the equality of affect is of some significance. Our patients constantly maintained a congenial "frame of mind," but this appeared to be more a function of personality organization than an aspect of the disease process.

Characteristics of Confabulation.—At first glance the confabulatory productions appear to possess a vividness and colorfulness suggestive of a flight of imagination into the realm of the bizarre

and phantastic. When confronted with a prosaic question such as, "What were you doing yesterday?" the confabulator, instead of recounting the routine of the ward, will happily describe his adventures, sailing the high seas, trooping with a circus, or associating with theatrical celebrities. Tall indeed seem the stories the confabulator narrates and the examiner cannot but suspect at first that the content of the productions suggests a verbal realization of long-standing desires. Such, however, is not the case for after verification of the facts from trustworthy relatives and acquaintances, it is apparent that these vivid experiences are actual incidents which have occurred in the life of the confabulator. In each instance, no matter how bizarre or unusual the content of the confabulation, it has been possible to show that at some time or other in the course of the patient's life the confabulatory experience has actually occurred and never has the confabulation been a pure fiction emanating from the imagination. Much of the vividness of the confabulation arises from the juxtaposition in time of a colorful past contrasted with an uneventful present, and when viewed in its proper time sequence, much of its color is lost.

The confabulator narrates only the high lights of his past experiences in rather a telegraphic style with a tendency to generalize and a paucity of descriptive detail. The following excerpt is illustrative: *Q*. What did you do last week? *A*. I was working. *Q*. Where? *A*. In Hartford, Conn. *Q*. Doing what? *A*. For Western Union. *Q*. What did you do for Western Union? *A*. Just going around getting orders. *Q*. What do you mean by orders? *A*. Just advertising.

The details can be recalled upon specific questioning, their addition often lends a different perspective to the content of the confabulations and with them much of the vividness is lost. Thus the sailor of the high seas has, it is true, sailed the high seas, but in the humble rôle of a news stand butcher; the friend of theatrical celebrities made his acquaintance by hurrying past them while shifting scenery.

From time to time the content of the confabulation may change with one vivid tale following another, but always investigation reveals that the content of the confabulation has its basis in some actual past experience. To a limited extent this shifting of the content of the confabulation may reveal either progression or

remission in the extent of the patient's memory loss and if contrasted with the patient's life experiences in their actual time sequence may even be of some prognostic significance.

This is well illustrated in the case of T. J. P. who was first seen shortly after he had evidenced mental symptoms following prolonged indulgence in alcohol. He had been in turn seaman on coastwise excursion boats, worker in a rubber factory, fur salesman, movie extra, circus ticket seller, machinist and telegraph messenger boy; these occupations being listed in inverse order, the first having been his last occupations just prior to the onset of his illness. At first the content of his confabulations was concerned with his experiences on the excursion boat, then as his mental condition became worse, shifted to earlier experiences connected with his fur selling and circus days. In possession of the chronological facts of his life, one could trace a progressive loss of memory back through the years until the content of his confabulations was finally concerned with incidents connected with his first job shortly after leaving school. Parallel to this tendency of the content of confabulation to be concerned with events occurring earlier in his life, his anwers to other questions were formulated with regard to events coexistent at the time when the confabulation content actually occurred. Thus, in response to questions he stated that his sister who was married and had a child at the time of his excursion boat experience, was married but childless when his productions centered around his circus experiences, and was still single when his content was concerned with a still earlier portion of his life. Later this patient gradually showed an improvement in which it was possible to retrace his occupational career and at the time of this writing his sister is once again married but still childless.

Progress of Confabulation.—It would thus appear that the content of the confabulation is determined by the extent of the memory loss. Most recent memories of the patient's life are lost sooner than those of an earlier part so that as the span of memory loss broadens as a result of a progression of the underlying process so does the content of the confabulation vary and tend to be descriptive of events which have occurred earlier and earlier in the life span of the individual. The confabulator fills in the memory gaps with events of yesteryear as if they were but of yesterday. Conversely

with improvement, as the confabulator's memory deficit becomes less, the content of his confabulations shifts more and more to events concerned with his more immediate past.

Discussion.

That confabulation may be directly dependent on structural changes in the brain has not been definitely ruled out. Only the earliest of writers have attempted to so relate it.

We have not attempted to minutely analyze the memory disturbance. It is not clear whether this is dependent on disorders of perception or apperception. To use Semon's terminology, we are not sure whether there is difficulty in "engram" formulation or in the ability to "ekphoria" or both. In the literature, varying opinions exist with respect to these patients' ability to retain and recall. We are inclined to agree with those who find retention less impaired than one might infer. In general the performance of our patients was equal to or closely approached the normal for repetition of digits. They encountered considerable difficulty, however, in carrying out commands, repeating addresses, and in grasping the sense of short stories. On the other hand, there was some meagre evidence to indicate that this was due more to inability to recall than to retain. It seemed at the time, for example, that our patients retained a knowledge of the investigative procedure and situation, yet they were unable to recall the same on request. More extensive observations are necessary to clarify this issue.

Van der Horst's statement that severe disturbances in time perception occur in these cases appears from our superficial observations substantially correct. That such a disturbance in itself is sufficient to produce confabulation, we are inclined to doubt. Inability to measure passage of time in the present, and to allocate past experiences in time is commonly encountered in those patients suffering from a memory disturbance on an arterio-sclerotic or senile basis. Yet, these patients do not consistently confabulate. We are disposed at present to clumsily group this disorder under memory disturbance.

The conclusions of Pick and Körner would seem not so different from our own, but rather represent differences in psychiatric points of view. It is possible to think in terms of an exigency and a

disposition to confabulate as does Pick. These, however, would seem to be an expression of personality structure as existent before and during the illness rather than a manifestation of the disease process. A responsiveness to suggestion is an inherent aspect of the personality of such individuals in our opinion. It may be that this aspect is more pronounced because of release of control by regions destroyed or functionally impaired in the sense of Hughlings Jackson. The meagre insult to the framework of the organization inclines us to doubt the accuracy of such a conclusion.

From our experience, we question the advisability of dividing confabulation as Bleuler and others have done, into two types—the dilemmatic and the phantastic confabulation. This differentiation, we feel, was made without due consideration of the experiences and personality makeup of the individuals. The term fabrication would seem more applicable where recourse to phantasy is indulged in.

We are cognizant of the fact that confabulation may rest upon other factors than here presented. Those factors presented need greater precision in definition. From our observations thus far, confabulation may be defined as the tendency of individuals of a particular personality pattern with incomplete memory loss, to substitute retained for forgotten experiences irrespective of time sequence.

Conclusions.

The development of confabulation is dependent on the interreaction of several factors among which are the retrogressive memory disturbance, more specifically the scope of that disturbance, a lack of insight, and a relatively intact personality structure which conforms to a more or less specific pattern. These factors vary in pathognomonic significance from case to case. Confabulation is to be distinguished from fabrication and phantasy expressions, is derived from actual experiences of the individuals, is made manifest by the dilemma the individual is confronted with.

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ULCERATIVE COLITIS AND THE PERSONALITY.*

By WARREN T. BROWN, M. D., PAUL WM. PREU, M. D.,
AND
ALBERT J. SULLIVAN, M. D.,
New Haven, Conn.

The importance of psychiatric factors in ulcerative colitis has been emphasized in recent years by several investigators. Murray,[1] in 1930, published a group of 12 cases, four of which were discussed in some detail, in which he found a definite relationship between emotional disturbances and the onset of bloody diarrhea. He found, furthermore, that the disease tended to occur in a definite type of personality characterized by fearfulness and emotional immaturity, the latter trait demonstrated by lifelong dependence upon parents. Sullivan and Chandler,[2] in 1932, reported six cases, and again emphasized the importance of emotional disturbances as precipitating factors. Sullivan,[3] in 1936, once more called attention to the problem in a general survey of the relationship between emotional states and diarrhea.

There is little evidence, however, in the many recent discussions of the etiology and treatment of ulcerative colitis to indicate that the conclusions of Murray, Sullivan and Chandler have been accepted by other workers. The publication of additional studies at the present time therefore seems desirable.

In the present report nine cases are discussed, with special reference to emotional disturbances as precipitating factors and to the general personality makeup of patients with this disease. In every case a definite diagnosis of non-specific ulcerative colitis had been made by the medical service of the New Haven Hospital, on the basis of the following evidence:

CASE 1 (N. H. H. No. 96825).—A 24-year-old Jewish-American housewife, admitted July, 1934. Diarrhea of one year's duration, accompanied by cramps and low-grade fever. Stools repeatedly contained blood, mucus

* From the Departments of Psychiatry and Mental Hygiene and Medicine of the Yale University School of Medicine and the Psychiatric and Medical Services of the New Haven Hospital.

and pus. No pathogenic organisms found in stools on repeated examinations. Physical examination negative except for tenderness over the colon. Severe hypochromic anemia. Sigmoidoscopic examination omitted because of pain and lack of cooperation. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: ulcerative colitis.

CASE 2 (N. H. H. No. A33604).—A 28-year-old Lithuanian-American housewife, admitted April, 1934. Intermittent attacks of diarrhea accompanied by cramps and fever, beginning in 1931 at 25 years of age. Physical examination essentially negative except for reddened pharynx and migratory arthritic manifestations involving elbow, knee and toe. Hypochromic anemia. Sigmoidoscopic examinations in 1934 and 1936 revealed typical ulcerative colitis. No amebæ on direct smear. Stools repeatedly contained blood, mucus and pus. No pathogenic organisms found in stools on repeated examinations. Stool cultures negative for dysentery, typhoid and paratyphoid organisms. Blood cultures negative. Agglutination negative for dysentery, typhoid and paratyphoid organisms. Throat cultures negative for hemolytic streptococci. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis in 1934 and 1936: ulcerative colitis.

CASE 3 (N. H. H. No. A53789).—A 25-year-old single Jewish-American unemployed woman, admitted March, 1935. Intermittent constipation and diarrhea accompanied by cramps and fever, beginning in 1932 at 21 years of age. Physical examination negative except for diffuse abdominal tenderness, dental caries and gingivitis. Hypochromic anemia. Stools repeatedly contained blood and mucus. No pathogenic organisms in stools on repeated examinations. Stool cultures negative for dysentery, typhoid and paratyphoid organisms. Agglutination negative for dysentery, typhoid and paratyphoid organisms. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: ulcerative colitis.

CASE 4 (N. H. H. No. 41806).—A 22-year-old single Italian nurse, admitted November, 1934. Diarrhea accompanied by cramps and fever of five months' duration, beginning in 1934 at 22 years of age. Stools repeatedly contained blood, mucus and pus. No pathogenic organisms found in stools on repeated examinations. Blood cultures negative. Agglutination negative for dysentery, typhoid and paratyphoid organisms. Physical examination essentially negative except for diffuse abdominal tenderness. Severe hypochromic anemia. Sigmoidoscopic examination revealed ulceration. No amebæ in smear from ulcers. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: ulcerative colitis, question of diffuse polyp formation.

CASE 5 (N. H. H. No. 10467).—A 32-year-old Italian laborer, admitted October, 1934. Intermittent diarrhea accompanied by cramps and fever since 1930, beginning at 28 years of age. Stools repeatedly contained blood, mucus and pus. No pathogenic organisms found in stools on repeated examinations. Stool cultures negative for dysentery, typhoid and paratyphoid and Malta fever organisms. Physical examination essentially negative except for diffuse abdominal tenderness and a palpable spleen. Hypochromic anemia. Sig-

moidoscopic examination revealed diffuse ulceration. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: ulcerative colitis.

CASE 6 (N. H. H. No. 84146).—A 21-year-old married American highway engineer, admitted January, 1935. Intermittent attacks of diarrhea accompanied by cramps and fever for one year, beginning in 1934 at 21 years of age. Stools repeatedly contained blood and pus. No pathogenic organisms found in stools on repeated examinations. Stool cultures negative for dysentery, typhoid and paratyphoid organisms. Physical examination negative. Moderate hypochromic anemia. Sigmoidoscopic examination revealed hyperemic bleeding mucosa. No amebæ in direct smear. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: January, 1935, irritable colon. July, 1936: ulcerative colitis.

CASE 7 (N. H. H. No. A39166).—A 27-year-old unemployed Italian man, admitted February, 1936. Diarrhea for four months accompanied by fever but not by cramps. Stools repeatedly contained blood, mucus and pus. No pathogenic organisms found in stools on repeated examinations. Stool cultures negative for dysentery, typhoid and paratyphoid organisms. Agglutination negative for dysentery, typhoid and paratyphoid organisms. Physical examination negative except for palpable sigmoid and lower descending colon. No anemia. Sigmoidoscopic examination revealed diffuse ulceration. Direct smear negative for amebæ. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: probable ulcerative colitis, later definitely diagnosed on re-examination.

CASE 8 (N. H. H. No. P. C. 1151).—A 34-year-old Jewish-American man, an accountant, admitted December, 1935. Intermittent attacks of diarrhea since 1930, beginning at 29 years of age. Stools repeatedly contained blood and mucus. No pathogenic organisms found in stools on repeated examinations. Physical examination negative except for multiple neurologic signs interpreted as evidence of Friedreich's disease by the neurologic consultant and considered unrelated to the gastrointestinal disturbance. Slight hypochromic anemia. Sigmoidoscopic examination revealed diffuse congestion of the mucosa of the lower bowel but no frank ulceration. Biopsy showed subacute and chronic inflammation of the rectal mucosa. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: ulcerative colitis.

CASE 9 (N. H. H. No. A67579).—A 20-year-old Jewish-American man, a tool-maker, admitted November, 1936. Diarrhea of 10 months' duration accompanied by cramps. Stools said to have contained blood and mucus, but on repeated examination in the hospital no gross blood found although moderate amounts of mucus were observed. No pathogenic organisms found in stools. Agglutinations negative for dysentery, typhoid and paratyphoid organisms. Stool culture negative for typhoid, paratyphoid and dysentery organisms. Physical examination negative except for loss of weight. Moderate hypochromic anemia. Sigmoidoscopic examination revealed edematous mucosa of lower bowel but no ulceration. Direct smear negative for amebæ. Clinical diagnosis: ulcerative colitis. Roentgenologic diagnosis: ulcerative colitis.

The cases were referred routinely by the medical service for psychiatric study. No attempt was made to select cases in which the existence of psychiatric factors was suspected. All cases are reported in which a fairly complete psychiatric evaluation could be made. The psychiatric data are summarized and grouped with reference to family history, personality makeup and precipitating situation.

Family History.

In each case the family history was scrutinized with reference to psychopathology especially in the patient's parents and siblings. In two cases it was impossible to obtain information. In each of the seven remaining cases evidence was found of emotional instability or other personality defect in other members of the family.

Case 1.—The patient's father was extremely excitable and emotionally labile. Her mother was likewise excitable, markedly concerned about the patient's illness and personal problems, and talked incessantly.

Case 2.—The only relative about whom anything was known was the patient's father. He was an alcoholic who sold the patient in her infancy to a neighbor for five dollars and a bottle of whiskey.

Case 3.—No family history available.

Case 4.—The patient's paternal grandfather was a queer person who withdrew from contact with others and lived alone the last 40 years of his life. Her mother was considered emotionally unstable.

Case 5.—The patient's father had been in difficulty all his life. He was a chronic irritable alcoholic. In his youth he was expelled from a seminary because he made love to the nuns. While in the army he was sent to a penal island. He beat his wife, abused his children, quarreled with everyone and was in continual trouble with the police. He attempted to shoot the patient's older brother, was hidden by the patient and sent home to Italy on a forged passport. There he was arrested shortly afterwards after having been cut up in a fight.

Case 6.—The patient's paternal grandmother was for several years in a mental hospital at the time of her menopause. The maternal grandfather and the patient's father both committed suicide.

Case 7.—No family history available.

Case 8.—The patient's father committed suicide. He had a peptic ulcer.

Case 9.—The patient's father took five or six laxatives every night. He continually talked about bowel movements and every night asked how many movements each member of the family had that day.

Personality.

An attempt was made in each case to obtain an insight into the general personality makeup, with special emphasis upon the way of experiencing or usual pattern of response to situations and to the degree of emancipation from parental authority and supervision.

Case 1.—The patient's personality was characterized by outspoken egocentricity and by a childish, spiteful emotional attitude. She was interested only in her own problems, especially her illness, and talked of little else. She seemed unable to appreciate the needs and the points of view of other people. She made things as unpleasant as possible for the nurses in the hospital, even to the point of deliberately defecating on the floor. When she was allowed to take walks outside the hosital, she boasted to other patients that special concessions had been made to her, and walked up and down outside their windows to annoy them. She definitely dramatized and exaggerated her discomforts. Before her illness she never had demonstrated much energy or ambition. She was gossipy and quarrelsome. Her occupational record was fair, although she lost one position through a quarrel with a superior. Her marriage, a year before the onset of her illness, was marked by a continuous series of quarrels and difficulties. During her illness she seemed to give up in the situation and to demand continuous sympathy and special consideration.

She was somewhat dependent upon her mother. Before her illness she repeatedly involved her mother in her marital difficulties. During her illness she demanded and obtained so much attention from her mother that her sisters complained about it.

Case 2.—The patient had always been readily fatigable and extremely anxious and fearful, especially about the question of childbirth. As a girl recitation in school was a severe ordeal. Her marriage was unsatisfactory. During sexual relations with her husband she would see in phantasy another man in whom she previously had been interested. Her attitude was definitely passive toward both her marital problems and her illness. Her ambitions in life were vague. She was strikingly perfectionistic especially about her personal appearance. Shortly after the onset of colitis a period of tension culminated in a dream-like episode of hysterical type, in which her surroundings seemed vaguely unreal.

The degree of emancipation was difficult to evaluate. She was twice left an orphan, once when her mother died and her father sold her to a neighbor, and again when her foster father died and her foster mother committed suicide at the funeral. She seemed to cling to her husband for support in an immature, childish way.

Case 3.—The patient, although ordinarily sociable and jolly, at times was definitely moody and worrisome. She was said to be definitely stubborn, and she summed up her own attitude toward herself and other people by saying,

"I mind my own business." She did fairly well in school and afterwards worked steadily in factories.

The only fact of interest in relation to the degree of emancipation was her always having taken care of her father, although her mother was living and well.

CASE 4.—The patient had been a timid, fearful person all her life and had tended passively to avoid assuming responsibility. At the same time she was demanding of others. Her entrance into school was postponed a year because of her fear of teachers. She had diarrhea in response to emotional tension for several years before the onset of the present illness.

She was demanding of her mother who was extremely oversolicitous concerning her. While in the hospital she dreamed that preparations were being made for her to marry her father.

CASE 5.—This patient was a sensitive, tensional, passive person, who always had been much attached to his mother. He had great difficulty in protecting her from his brutal father.

CASE 6.—The patient was a sensitive, moody person who at times responded to difficulties with explosive irritability. He would become increasingly tensional and apprehensive in stressful situations. He was of good intelligence and a hard, moderately successful worker. His moral code was strict and he had difficulty in discussing his personal feelings with others. His general adaptation to life was passive. He left major personal decisions largely to his mother and wife.

He was extremely dependent on his mother. During his engagement he was working away from home. On his free weekends he would visit his mother rather than his fiancée who lived an equal distance from his work. On his wedding day he came to his mother and cried. After his marriage his mother lived with him and dominated the situation.

CASE 7.—The patient was of dull average intelligence and had a fairly steady work record in factories, although he had never been a vigorous person and had lacked definite ambition and purpose. He was stubborn, argumentative and markedly self-centered. He made friendships readily but tended to keep his troubles to himself. He was always somewhat anxious and worried over financial responsibilities. As a child he had been afraid of playmates and had nightmares until ten years of age if one of them would threaten him.

He had always been attached to and concerned about his mother, and referred to his father as a damned fool.

CASE 8.—The patient was a worrisome, exacting person who never had displayed much energy or ambition. He tended to avoid responsibility. Since childhood he had been fearful and apprehensive. At no time did he actively seek contact with the opposite sex but had numerous erotic phantasies about women and spent much time reading cheap romantic literature. His ego-

centricity and boastfulness were extreme and made it impossible for him to get along with other patients in the hospital, although he was not seriously ill at the time.

Although he was 34 years old he had lived continuously with his mother except for two periods of a few months each. Three months before his admission to the hospital the family separated him from his mother because she was worn out from waiting on him.

CASE 9.—As a child this patient had been extremely shy and insecure. He postponed changing to long trousers because he felt he would be conspicuous and falsified a physician's excuse from gymnasium because he was ashamed to appear in a gym suit. Although he had a fair occupational record, he seemed lacking in energy and definite ambition and exceedingly self-centered.

His mother died when he was an infant. His stepmother was a widow who had lost three children. She married his father because she loved his children and was extremely over-solicitous toward the patient, calling him her baby and her favorite. He preferred to sit with her instead of joining other children in play, and frequently asked her, "Mama, do you love me?"—demanding a demonstration of affection. There was constant friction between him and his father who became markedly irritable.

PRECIPITATING SITUATION.

In each case special attention was given to the evaluation of the life-situation with which the patient was confronted at the time that the gastrointestinal disturbance began.

CASE 1.—The patient married against her parents' wishes. Subsequently there was continuous difficulty between the two families. She shortly became pregnant; and after four months, both families attempted to have the marriage annulled. The patient was sent to New York were it was planned she should deliver the baby and have it adopted. At the same time her husband was sent to Boston. In New York the patient refused to permit social workers to arrange the adoption. Meanwhile her husband visited her secretly and they became reconciled. Soon after the birth of the baby the patient became pregnant a second time and at once attempted to induce an abortion. Various drugs were ineffectual but in the seventh month of pregnancy she succeeded in aborting herself by inserting a rubber catheter into the cervix. After an uneventful recovery she missed another menstrual period. She again inserted a catheter, this time producing hemorrhage. She entered a hospital where a dilatation and curettage was done. During all this time her husband neglected her. *Ten days after the dilatation and curettage severe diarrhea began.* After complete study in the hospital a diagnosis of ulcerative colitis was made. Later the patient stated she thought she had run the catheter through the vagina into the rectum and that the blood in the stools was due to menstruation.

CASE 2.—The patient's mother was said to have died giving birth to her. Since girlhood she had a great fear of dying in childbirth. Whenever she would hear that a woman was pregnant she would fear for that person's life. She married reluctantly because of this fear of pregnancy. *Gastrointestinal symptoms began during courtship and continued until the present time.* When emotionally tense she would complain of abdominal pain, be nauseated and vomit. *During courtship she became severely constipated* and had to take a daily laxative. After five years this symptom disappeared. Five years after marriage she consulted a physician concerning her indigestion and nervousness. He told her that if she had a baby she would have something to occupy her mind and that her symptoms would disappear. She discontinued contraception and became pregnant. For six months she felt fairly well, but as the time for delivery approached she became extremely tensional and feared she might go insane. The delivery was uneventful, but her fear of pregnancy remained. Two years later, feeling she should have another child she substituted suppositories for condoms as a contraceptive measure. She became pregnant. *Again she felt well for the first six months, but in the seventh month she began to be apprehensive. At this time she began to have loose stools containing bright red blood and mucus.* Her physician explained her symptoms on the basis of a small anal fissure. Delivery was again uneventful, and for six months her gastrointestinal tract was quiescent. She and her husband decided definitely to have no more children. She continued to be apprehensive before each intercourse. Condoms were water-tested before and after use. If a small leak was found the patient would become frightened and have diarrhea stools which sometimes contained blood. Six months after the birth of the second child she had a severe attack of bloody diarrhea and a year later, while concerned about getting settled in a new home, she had a third attack, at which time a definite diagnosis of ulcerative colitis was made.

CASE 3.—The patient had always been constipated, especially since 1930. In 1932 after an appendectomy, mucus and blood appeared for a time in the stools. The blood was thought to be due to hemorrhoids. Bleeding ceased but mucus continued to be present. In August, 1934, she was feeling well and weighed 133 pounds. At the advice of a girl friend she put "reducing salts" in her bath. She became panicky in the bathtub, felt her heart beating fast and vomited. A local physician diagnosed thyroid trouble. The patient had a "nervous stomach" subsequently and vomited in the morning. Constipation with mucus continued. In January, 1935, while visiting her brother she fell on the ice and hurt the end of her spine. *Diarrhea began with mucus and blood in the stools* and continued alternating with constipation. She was depressed, mentioned suicide, and believed the reducing salt bath had caused her illness.

CASE 4.—This patient had her first attack of diarrhea at about 17 when she began going out with men. When she had a date and was waiting for a young man to arrive she would develop intestinal cramps and on many occasions would have as many as four stools before his arrival. The number

of stools and the intensity of the cramps varied with the excitement. If, for instance she was going to a movie, the cramps and diarrhea might not be very distressing. However, if the occasion was a dance or some special occasion, the cramps and bowel movements would be extremely severe. Once the young man had arrived and the evening actually had begun, the difficulty would subside. She denied that she ever had to leave a party to have a diarrheal stool, and volunteered that the difficulty seemed to be always in connection with the anticipation, rather than with the actual event.

Two years before admission to the hospital the patient began keeping company regularly with a certain young man and became definitely interested in him. Diarrhea and cramps occurred before his calls. Three months before admission she was told by another friend that the young man intended to propose marriage to her. In the hospital she admitted that she wanted him to, but that she suffered enormously from emotional anticipation regarding it. While experiencing this anticipation the patient had an automobile accident and was severely frightened. Shortly following this, while on duty as a nurse, she was called during the night to relieve another nurse with a private patient. She entered the room and found the patient dead. She became frightened, screamed, ran from the room, and although she regained some composure and prepared the body, she could not sleep afterwards and was extremely shaky for about eight hours. *She began to have diarrhea shortly afterwards* which continued while she worked until she became so weak it was necessary for her to go to bed. At that time she was having frequent watery stools containing blood, pus and mucus.

CASE 5.—*Diarrhea began in 1931.* At that time the patient and his wife were having frequent quarrels. His father had come to him in a penitent mood and told him he had decided to stop drinking and to start working, and had induced the patient to borrow some money for him to go into business. The patient did this but the father squandered the money on drink, whereupon the patient had to assume the indebtedness with no source of income to meet it. At the same time he was having difficulty with his job. A group of employees of the railroad, for which he was working, had formed a ring and were stealing the property of the company. The patient was not a member of this ring, but knew of its existence and activities. Due to the depression the personnel of the company was being cut and demotions were made necessary. This was done on a basis of seniority. The patient had seniority over a member of the gang who was about to lose his job. He had a feeling that this person was going to cause him trouble. The other man came to him and told him that he was going to lose his job and that he was broke and needed spark plugs for his car. These were available in the patient's department and he consented to slip some of them out to the other man. This was a frame-up as a special detective had been tipped off by the man who asked for the plugs. As a result the patient lost his job and was black-listed for railroad employment. *The first attack of ulcerative colitis followed this chaos of difficulty and lasted five months.*

The next attack of colitis occurred in 1932. In the interval the patient had had no job and was in debt. His father had been causing extreme grief for the family and was beating the patient's mother frequently. The difficulty reached its climax on Easter Sunday, 1932, when the father attempted to shoot the patient's older brother. The patient succeeded in shipping his father to Italy on a forged passport. *Ulcerative colitis* recurred suddenly. The last attack in 1934 also had a sudden onset. The patient attributed it to having had wine and coffee. On questioning him, however, it was learned that he frequently had taken wine and coffee with no such results. Further investigation revealed that he, his wife, and children were living with his wife's family, that he was not working, and that his wife's brothers were complaining that they were having to support him and his family so that a number of quarrels had resulted.

CASE 6.—The patient was living with his wife and mother in a small apartment. His mother was dominating and his wife was sensitive. A definitely strained situation had arisen in the home and added to this his wife had become unexpectedly pregnant in spite of contraceptive precautions. The patient's job was not going well and he was having difficulty working long hours on a bridge project. *In this situation diarrhea began and continued for 10 days.*

The second attack began two weeks after his first child was born, on the day his wife was brought home from the hospital. This time the diarrhea was more severe and lasted two weeks, the last two days of which the patient spent in bed.

The third attack began 11 months after the first when the home situation had become more tense, the mother had become more dominating and had assumed the care of the baby. The wife had become reticent. To add to this, a short time before the onset of the third attack, members of a certain political party canvassed the highway department (for which the patient worked as an engineer) under the pretense of electioneering for their candidate in the ensuing election. What they actually did was to insist that each member of the department contribute to their campaign fund. The patient did this reluctantly, and afterwards began to worry for fear the other party would win at the election and bring about the loss of his job. About six weeks before the immediate onset the patient's mother left for a visit to her other son and wrote later on that she thought of staying on for a longer period. The patient wrote to her and insisted that she return home right away. She answered that she would be back November 17. On November 15 the patient developed his third attack of ulcerative colitis.

CASE 7.—In 1931 the patient contracted gonorrhea and was treated intensively. At the same time his mother was having difficulty with a neighbor who claimed her little daughter was abused for short-cutting across the mother's lawn. After much threatening the neighbor sued and was awarded $600 damages. The patient was angry at the neighbor's attorney. He consider him a shyster and stated he had hired false witnesses. The neighbor's sons continued to insult the patient and to threaten him with physical violence

even after the suit had been settled. *Diarrhea began in this setting* although the exact date of onset could not be ascertained. Subsequently the patient would have diarrheal stools, sometimes containing blood, whenever he was threatened or when he would see any of the people involved in the suit. A clear-cut instance of this was observed during his treatment in the outpatient clinic. He was complaining of severe diarrhea with the passage of bloody stools hourly which had begun abruptly a few days previously while he was on his way to a Y. M. C. A. gymnasium. He denied having been upset emotionally, but during the course of the interview blurted out, "By the way, I saw that bastard just before I went to the Y," referring to the lawyer who had conducted the suit against his mother.

CASE 8.—*The patient's first gastrointestinal symptoms occurred in 1925 at 21 years of age when he was away from home for the first time in his life.* At that time he was troubled by nausea after meals, and gave up a promising position to return home. From 1930 to 1932 several bouts of diarrhea occurred, without frank blood in the stools. From January to March, 1932, he had 10 to 12 diarrheal stools a day. The patient stated these stools were bloody but a report from a physician who attended him made no mention of the fact. A diagnosis of nervous colitis was made at a hospital in New York. The roentgenologic diagnosis at that time was mucous colitis.

Late in 1932 his father committed suicide after an operation for perforated peptic ulcer which failed to relieve his pain, and was found dead by the patient on his return from work. For six months following this he had frequent dreams of his father during which he would cry out in his sleep. *Diarrhea recurred about this time,* and he continued to have diarrheal attacks until his admission to New Haven Hospital.

The stools were frequently bloody. In December, 1935, his family urged him to marry a girl they had selected for him. He said he intended to comply with their wishes but that his diarrhea recurred and "the thing died a natural death."

CASE 9.—The patient was so bashful and timid as a small boy that he would not use the school toilet but would wait until he got home, no matter how great the desire. He had his first nocturnal emission at 14 and immediately had to rush to the toilet to have a bowel movement. Subsequently his frequent nocturnal emissions were always immediately followed by diarrhea. A masturbation habit developed, diarrhea following ejaculation from masturbation in a similar manner.

Ten months before admission he was working as an apprentice machinist under pressure. At the same time he was having daily quarrels with his father. *His diarrhea became much more marked in this setting and blood appeared in the stools.*

GENERAL DISCUSSION.

There were three main findings of interest in the clinical psychiatric study. First, the heredity in those cases in which in-

formation could be obtained was poor from the psychiatric point of view. Second, the patients as a group were individuals of low energy, endowment, emotionally labile and apprehensive, passive, egocentric and dependent. Third, in eight of the nine cases the onset of ulcerative colitis occurred at a time when the patient was emotionally tense and upset by a difficult life situation.

The information which it was possible to obtain concerning the family background was insufficient to warrant detailed consideration. It would seem sufficient to state that there was evidence of psychopathology in the direct line in every case in which data were available.

The personalities had many features in common. It is difficult to state within the limits of this report the many details upon which opinions concerning the personality makeup were based. None of the patients had ever manifested a good, well sustained output of energy or drive. On the contrary they seemed rather weak and lacking in vigor. None of them achieved a healthy adult sexual adjustment. In four cases marriage was unhappy and marital sexual adjustment inadequate. Three patients avoided contact with the opposite sex and the two others fled from specific sexual opportunities. Temperamentally emotional lability, anxiety and apprehensiveness were outstanding. These affective characteristics seemed to have been present before the onset of ulcerative colitis and in several instances could be traced to childhood. Characterologically the patients were egocentric, passive and insecure. They seemed preoccupied with their own problems and illnesses to the practical exclusion of other people. They seemed passive in their general environmental relationships and tended to give up readily in the face of problems rather than to attack difficulties resolutely and constructively. Their insecurity was demonstrated in various ways, most obviously by a failure to achieve emancipation from parents or parent-substitutes.

The type of personality observed in the patients with ulcerative colitis is best seen in contrast with the personalities of individuals with peptic ulcer, which are described in a study not yet published.[4] The typical ulcerative colitis patient seems to prefer passivity; the typical peptic ulcer patient is extremely energetic and active. The ulcerative colitis patient tends to give up readily in the face of difficulty; the peptic ulcer patient refuses to give up even when in

acute pain. The ulcerative colitis patient seems to avoid responsibility; the peptic ulcer patient accepts responsibility and even assumes more than his share. The ulcerative colitis patient seldom is successful by ordinary social standards, whereas the peptic ulcer patient frequently achieves considerable success at his particular social and economic level. The evaluation of the capacity for successful achievement was made in each case with regard to the patient's life before the onset of the illness.

The objection is sometimes raised that the personality abnormalities or liabilities observed in patients suffering from a chronic disabling somatic disease are simply the patient's response to a difficult situation. It is, of course, obvious that chronic ulcerative colitis presents a difficult problem of adjustment and taxes severely the resources of the personality. The characteristic traits of the type of poorly adjusted personality described in this report, however, seem to have been present before the onset of ulcerative colitis, although in some cases they were accentuated following the onset of the intestinal disease.

A history of an emotionally disturbing life experience having occurred just before or at the time of the onset of the ulcerative colitis was obtained without difficulty in eight of the nine cases. In the ninth case (case number eight), the exact time of onset of the colitis could not be accurately determined. No specific type of precipitating situation was found, but in each case in which the relationship was observed the patient had been involved in an adjustment situation which was difficult for him as an individual and to which he had responded with tension and anxiety. This finding would be no more than suggestive in an individual case. It is felt, however, that its regular occurrence in an unselected group of cases tends to confirm the opinions of Murray, Sullivan, and Sullivan and Chandler that emotional disturbances are important in precipitating attacks of ulcerative colitis. It seems worth noting, furthermore, that in three cases the patient had developed diarrhea and in one case had developed constipation in response to disturbing experiences before the onset of definite ulcerative colitis.

It is not maintained that emotional disturbances "cause" ulcerative colitis. The possible importance of fundamental gastrointestinal instability needs to be considered as well as the possible

importance of bacterial invasion. Still other factors may play a rôle. The results of this study indicate, however, that in a certain type of personality, which is here described, ulcerative colitis may be precipitated by an emotional disturbance.

In this paper are reported the outstanding personality traits found in nine patients with ulcerative colitis who were studied from the psychiatric point of view. It might be added that in 20 other cases of ulcerative colitis seen in seven years in which personality data were available, there was remarkable conformity to the type above described. In the total group of approximately 30 cases there was not a single successful marriage or a complete emancipation from parental ties. There was found a uniform *way of experiencing* characterized by a tendency to give up in the face of difficulty.

Conclusions.

1. A psychiatric study of nine unselected cases of ulcerative colitis uniformly revealed a personality type characterized by low energy endowment, emotional lability, anxiety and a tendency to give up in the face of difficulties.

2. All available personality data on 20 cases less carefully studied conforms with this personality type.

3. In personalities of this type emotional disturbances are important factors in precipitating attacks of ulcerative colitis.

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Proceedings of Societies.

THE AMERICAN PSYCHIATRIC ASSOCIATION

PROCEEDINGS NINETY-FOURTH ANNUAL MEETING.

HOTEL FAIRMONT, SAN FRANCISCO, CALIFORNIA,
JUNE 6-10, 1938.

TUESDAY MORNING SESSION.
JUNE 7, 1938.

The ninety-fourth annual meeting of The American Psychiatric Association convened in the Hotel Fairmont, San Francisco, Calif., at ten-ten o'clock, Dr. Glenn E. Myers, Chairman of the Committee on Arrangements, presiding.

CHAIRMAN MYERS.—Reverend Richard T. Howley, Archdiocesan Hospital Councillor, Catholic Charities, San Francisco, will give the invocation.

REVEREND RICHARD T. HOWLEY.—Almighty God, Creator, Benefactor and Protector of the human race, we pledge ourselves at the opening of this conclave the highest ideals of human service, Thy mission divine, a healing mission, curing and relieving physical torment and pain, allaying mental distresses, doubts, worries and anxieties, by enriching the mental powers of man and by harmonizing them with the spiritual and physical.

This morning we present ourselves in the atmosphere of Thy benign and benedictional influence that our deliberations during these days will be of lasting benefit, not only to the doctors whose lives are consecrated to the care of the mentally ill, but to all who come within the area of their influence. Vouchsafe to give unto all here present a firm conviction of the sacredness of their duties, a deep understanding of their mutual problems and a firm trust and confidence in thy partnership of service. May a spirit of self-sacrifice be ever diffused for good, for a conscientious, sympathetic and scientific attitude to all professional problems so that the modern fallacy of walking and acting in the danger zone of expediency may never displace the traditional God-given approach by which we recognize the valor, the personality, the value of the human soul. For these qualities we petition Thee, most merciful One, that we may better serve a suffering and mentally ill world in a true Christian knowledge and a value of human life, a novitiate with an eternal life to Thee. Vouchsafe to hear our prayer of petition for Thy guidance that all here assembled may go forth with a deeper knowledge of their professional

responsibilities and renewed courage ever to walk worthily in the profession to which they are summoned. Amen!

In the name of the Father, the Son and the Holy Ghost. Amen!

CHAIRMAN MYERS.—Mr. E. J. Kane, Secretary to Mayor Rossi, will speak for Mayor Rossi.

MR. E. J. KANE.—*Mr. Chairman, Reverend Father, Ladies and Gentlemen:* I deem it a great privilege as the representative of the Chief Executive Officer of our City to welcome to our friendly shores this 94th annual meeting of The American Psychiatric Association.

Your aims for the betterment of humanity are quite appreciated in this city. For almost twenty years, our Department of Public Health has taken an active interest in preventive work relating to the problems presented by various mental disorders and defects. Also, we have been alert to other difficulties such as delinquency. Of special interest to us has been our work in regard to mental hygiene of school children. In this realm of study we meet almost daily problems presented by these children ranging from shyness and insecurity to defiant stubbornness and cruelty. Proper treatment of such cases requires a careful study of the life of the individual to discover what factors are interfering with a normal attitude on their part.

So you see in coming to us in San Francisco, you find a field already in intensive development. I think no community anywhere strives to do more to render its children normal than ours. We are pleased by the reaction to this work, although of necessity it must be slow.

We public officials, and particularly our Mayor, should base, and do base, our main objective on the promotion of better conditions in the home life of our people. No more exalted duty exists than the maintenance of the mentality of our people at its highest point of efficiency. Therefore, we are doing an increasing amount of preventive work among children under the age of twelve and we know your presence with us and the results of your deliberations here will strengthen our energies and resources in this humane endeavor.

Having been properly psychoanalyzed by this time by the penetrating minds of those of you ladies and gentlemen sitting before me, I believe that it now is fitting to tell you that we in San Francisco have some singular attractions for you. This city has proved most attractive to visitors since its founding a century ago under Mexican rule, and especially since our state passed into the Union in 1850. Here in California and in San Francisco have been enacted some of the most colorful scenes of American history. The clearing house for fabulous riches from mine, forest and stream, San Francisco is reckoned the commercial center of the Pacific Coast and undoubtedly its most splendid port.

There is much here to engage your attention, interest and enjoyment and I hope that during your leisure hours you will mingle with our citizens and partake with them of the joys that make San Francisco a hard place to leave.

Now in the name of His Honor, Mayor Angelo J. Rossi, may I say to you that when in 1939 to celebrate the completion of our two world-famed bridges we shall throw open the gates of the Golden Gate International Ex-

position, a truly representative pageant of the Pacific, he hopes and we hope that the vacation plans of many of you and your families will point the way to another visit with us. May your stay now be replete with happiness. Welcome once again in the name of His Honor, the Mayor, and all the people of San Francisco to the City by the Golden Gate. Thank you!

CHAIRMAN MYERS.—It is now my pleasure to call upon the Honorable Harry Lutgens, Director of Institutions, of the State of California.

HONORABLE HARRY LUTGENS.—*Mr. Chairman, Honorable Guests and Members of The American Psychiatric Association:* As a representative of the state government of California and of the department which is directly concerned with psychiatry, it affords me great pleasure to welcome The American Psychiatric Association to San Francisco and California.

The history of psychiatry in California is comparatively new. It started here in this city by the Golden Gate in 1849, in the days of the gold rush, when the trials and tribulations and excitements of the times caused mental breakdowns, and became the trouble and difficulty of the then authorities. Our first mental hospital in California was a ship anchored off the shores of San Francisco. When we compare the methods of treatment that have developed since that time and compare them with our present mental hospitals, we realize the progress that psychiatry has made in California.

Our eyes have always been turned to the East for the latest methods of treatment and we have received considerable benefit from your research work. So it is with no degree of lack of appreciation that we welcome you as delegates here today. We know that you will glean much benefit from your conferences and we hope that you will avail yourselves of the many opportunities for recreation and play that our diversified state affords.

Should you be interested in any of our state institutions, it would be a pleasure, I can assure you, to arrange for transportation and every possible courtesy that we can extend. We of California feel highly honored that you have chosen this state for your assemblage, and it will be our earnest endeavor to make your visit here a memorable one.

Thank you!

CHAIRMAN MYERS.—Thank you, Mr. Lutgens!

Speaking in welcome on behalf of the medical profession in California will be Dr. Edward W. Twitchell, Clinical Professor of Neuropsychiatry, University of California.

Dr. Twitchell!

DR. EDWARD W. TWITCHELL.—*Mr. Chairman, Members and Guests:* It is hardly necessary for me to tell you how glad we are, we the psychiatrists of the West Coast, to have the Association out here. We have waited for a great many years in order to have this and I am quite sure that we owe this visitation very much to the hard work and the preparations made by my friend, Dr. Myers. In any event, we are delighted beyond measure, as I say, to have you out here.

I wonder if you realize just how far west you have got. When we go to Reno, we speak of having made a trip East. And Los Angeles is almost as far east of Reno as Reno is of San Francisco, so you can see you are a long way west.

We hope that this will be merely a forerunner of many other visitations in the future. In the meantime, we shall do everything we can to make your stay as pleasant as possible and extend all sorts of hospitality so far as we may. I haven't anything more to tell you, except to reiterate my pleasure in seeing you here.

CHAIRMAN MYERS.—Dr. Chapman, President of The American Psychiatric Association will make response to the addresses of welcome by these gentlemen.

PRESIDENT CHAPMAN.—*Father Howley, Mr. Kane, Mr. Lutgens and Dr. Twitchell:* May I thank you on behalf of The American Psychiatric Association for your very gracious words of welcome. We have come here from varying distances, with the full knowledge of the fact that we have much to see and much to learn. We have, of course, enjoyed and are going to continue to enjoy greatly the natural beauties of the coast line and mountain, but we realize fully that we have so much more to learn, so much to learn from your educational institutions which we want to know better, so much to learn of the life in your institutions, your activities and pursuits in this great western country.

The tempo and the rhythm of your life in the West, I think, is one all your own. We are very, very happy to be here, and having found the way, after all these years, I think that I may speak for all of us when I assure you that we will return frequently, we hope. Again, may I thank you for your courtesy in coming here.

CHAIRMAN MYERS.—It is my pleasure now to turn the meeting over to the President of the Association, Dr. Chapman.

President Ross McC. Chapman assumed the chair.

PRESIDENT CHAPMAN.—The next in the order of business, for there is a certain portion of the morning program that is given to it, is the report of the Chairman of the Committee on Arrangements, Dr. Glenn E. Myers.

DR. GLENN E. MYERS.—*Mr. President, Ladies and Gentlemen:* I have observed there was an item indicating a report of the Committee on Arrangements. I am singularly remiss in failing to have a written report, with the assumption, however, that perhaps the arrangements as made will speak for themselves in the course of this meeting. We have long looked forward to a meeting of this Association on the Pacific Coast. We have felt the need for such a meeting here and hope that this will be but a precedent established for another meeting from time to time. We have endeavored to inform key persons in the eleven western states and Western Canada and even farther west on the Pacific Coast of this particular meeting, and we are happy that there has been such a good response. We are very happy

that so many notable persons in psychiatry have come out from the East for this particular meeting. We are appreciative of the splendid program that has been prepared.

There isn't anything particularly to report of the activities of the Committee itself, a group who have worked very earnestly in the last year and appreciate the cooperation that has been given by all of the officers of the Association. We are very happy to have this meeting eventually in effect and we should, as the Committee on Arrangements, like to add our particular expression of welcome to the members of the Association. Thank you, Mr. President!

PRESIDENT CHAPMAN.—The report of the Committee on Program, by the Chairman, Dr. Roscoe W. Hall. Dr. Hall!

Dr. Hall announced several changes in the printed program.

PRESIDENT CHAPMAN.—I had hoped that Dr. Hall would take this occasion to speak on behalf of the audiences in the various sessions and on behalf of the readers as well. I hoped he would call attention to the fact that the presiding officers of the various sections are instructed to hew closely to the line in the matter of time, so that if a half hour is available for a reader, it will be half an hour. That is for the benefit of course, as you all know, of those who follow. I am sure we will have cooperation of all concerned and I know the meetings will be the happier therefor.

Next is the report of the Council by our Secretary.

SECRETARY SANDY.—The Council met at the Fairmont Hotel, San Francisco, June 6, 1936, at 7.30 p. m. Thirteen members were present. Dr. Chapman, the President, presided.

The Secretary reported changes in the membership as follows: Four Members and three Fellows resigned, the Council voting that the resignations be accepted if the dues have been paid: In the case of one member, two years in arrears, the Council voted remission of dues and acceptance of resignation under unusual circumstances. It was recommended that service be discontinued, including the JOURNAL, in the case of eight Fellows, five Members, one Associate Member two years in arrears, a letter to be sent to each member notifying him of the action taken. The Council voted to drop from the Association four Fellows, four Members and three Associate Members three years in arrears in dues, two notices and a special letter having been sent to them.

The Council recommended approval for Life Membership the following elected to Active Membership in 1908, with 30 years' service:

Dr. Menas S. Gregory, New York, N. Y.
Dr. Edward M. Green, Harrisburg, Pa.
Dr. Graeme M. Hammond, New York, N. Y.
Dr. Smith Ely Jelliffe, New York, N. Y.
Dr. John I. McKelway, Orofino, Idaho.

Dr. Cheney presented the report of the Board of Examiners based upon which the Council voted to recommend for election 34 applicants for As-

sociate Membership, 163 applicants for Membership, 24 to be transferred from Associate Member to Member, 11 to be transferred from Member to Fellow. No one was recommended for Honorary Membership.

The Council also recommended the reinstatement of six Fellows and one Member.

The Council voted that the Board of Examiners continue the present practice of choosing applicants for Fellowship.

The Council accepted and approved for printing in the proceedings the reports of the following committees, namely: Executive; Research; Nomenclature and Statistics; Nursing, as modified; Standards and Policies, as modified; Legal Aspects of Psychiatry, as modified; and Psychiatric Social Service.

The Council recommended that the Chairman of the Committee on Nomenclature and Statistics confer with the proper committee of the American Medical Association and offer the continued cooperation of this Association in the proposed revision of classification.

The Council voted to refer back to the committee for revision the report of the Committee on Psychiatry in Medical Education.

No report was submitted at this time by the Committee on Public Education.

The Council accepted the recommendation of the Committee on Ethics as to the activities of one member.

The Secretary read the request of the Virginia Neuropsychiatric Society for affiliation with the Association. The Council voted disapproval because the Society does not conform to the requirements of the affiliated societies, as prescribed by Article IV of the By-laws.

The Secretary read a communication from Dr. Wilbur in reference to the pending anti-vivisection law in California and the Council voted that the President designate a committee of two to give this matter due consideration and to report at a subsequent meeting. The President appointed Dr. Hamilton and Dr. Johnson to such a committee.

The Council voted a sufficient appropriation to purchase for distribution 500 reprints of Dr. Overholser's article in the *Journal of Criminal Law and Criminology*, if it is still in type.

An invitation was transmitted to the Association through the British Embassy from the Royal Medico-Psychological Association to send delegates to the annual meeting which is to be held in Ilkley, Yorkshire, from the 6th to the 8th of July, 1938. The Council authorized the President to appoint any member to represent the Association who may find it possible to attend the meeting of the Royal Medico-Psychological Association.

The Secretary reported that the Executive Committee met in Chicago on May 30, 1938, and selected the Palmer House as the headquarters hotel for 1939. The time of the 95th annual meeting to be the week of May 8, 1939.

There followed an informal discussion of the meeting place for 1940, further consideration to be given this question at subsequent meetings of the Council.

The Executive Assistant presented a tentative budget of the Association expenses for the next fiscal year.

Following a general discussion, the Council voted that the members' dues shall be raised from $5 to $7, effective July 1, 1938.

The Council also voted that all funds obtained from the operations of the annual meeting are the property of the Association and any expenses incurred shall be on vote of the Council.

The Council adjourned at 11.30 p. m.

PRESIDENT CHAPMAN.—You have heard the report of the Council. What is your pleasure?

DR. A. A. BRILL.—I move it be adopted.

The motion was seconded by Dr. Cheney, was put to a vote and carried.

PRESIDENT CHAPMAN.—Next in order is the report of the Secretary-Treasurer.

SECRETARY SANDY.—I shall summarize these reports very briefly. The full report will appear in the proceedings.

I shall first give the summary of the membership of the Association. At present, the total membership is made up as follows:

19 Honorary members.
59 Life members.
4 Corresponding members.
872 Fellows.
828 Members.
98 Associate members.

Total membership on April 15, 1937, was 1732.

Total membership on May 15, 1938, was 1880, making a net gain of 158.

PRESIDENT CHAPMAN.—You have heard the report of the Secretary. What is your pleasure?

DR. BRILL.—I move it be adopted.

The motion was seconded by Dr. Parsons, was put to a vote and carried.

PRESIDENT CHAPMAN.—Now the report of the Treasurer, Dr. Sandy.

SECRETARY SANDY.—The report of the Treasurer is based upon the findings of the certified public accountant and represents the period from April 16, 1937, to May 14, 1938, or 13 months. This report will appear in full in the proceedings. In order to conserve time, I shall abstract it.

The total receipts for this period, the regular receipts, were $14,513.97. There were also received three special funds, one from the Markel Foundation, one from the Rockefeller Foundation, and the San Francisco Special Train Account, which represented a total of $27,106.76, making the total receipts $56,386.53.

The total aggregate disbursements were $17,982.34. The total balance, subject to the call from the special funds, would be $38,404.19.

The JOURNAL account showed receipts of $11,599.23; disbursements, $11,228.47, leaving a balance of $370.76.

The total bank balances are $38,404.19, subject to special funds which will leave the net resources available, $26,182.16.

PRESIDENT CHAPMAN.—The report of the Treasurer is before you. Is there a motion?

DR. CHENEY.—I move this be referred to the Auditors, in accordance with the usual custom.

PRESIDENT CHAPMAN.—I don't know that a motion is necessary really at that point; in fact, that is an automatic procedure. It will be carried out.

As the Committee on Resolutions, the following members are appointed: Dr. Karl A. Menninger, Kansas, Chairman; Dr. E. W. Allen, Georgia; and Dr. Horace G. Ripley, Vermont.

During the year past, 19 of our number have left us. We will stand while the Secretary reads the names of our friends who have passed on.

The audience stood while Secretary Sandy read the names of the deceased members, as follows:

Lorenz A. Miesch, M. D., Black Jack, Mo., died Apr. 19, 1936.
John A. Houston, M. D., Northampton, Mass., died Jan. 18, 1937.
Reginald S. Elmo Murray, M. D., Gardner, Mass., died Mar. 13, 1937.
Paul H. Rupp, M. D., Wauwatosa, Wis., died Apr. 6, 1937.
M. S. Gregory, M. D., Oklahoma City, Okla., died Apr. 9, 1937.
Richard L. Eltinge, M. D., Fort Lyon, Colo., died May 21, 1937.
A. Burton Eckerdt, M. D., Heeia, Oahu, T. H., died June 18, 1937.
James V. Anglin, M. D., St. John, N. B., Canada, died June 28, 1937.
Henry J. Sommer, M. D., Hollidaysburg, Pa., died July 10, 1937.
James Ramsay Hunt, M. D., New York, N. Y., died July 22, 1937.
Arthur W. Rogers, M. D., Oconomowoc, Wis., died July 27, 1937.
J. J. Kindred, M. D., Astoria, L. I., N. Y., died Oct. 23, 1937.
Clyde R. McKinniss, M. D., Blairsville, Pa., died Oct. 30, 1937.
Dan S. Renner, M. D., Skillman, N. J., died Dec. 13, 1937.
Katherine R. Moses, M. D., Hebbitts, Ohio, died Dec. 16, 1937.
Stephen E. Vosburgh, M. D., Pownal, Me., died Dec. 24, 1937.
Truman J. Allen, M. D., Brandon, Vt., died Dec. 29, 1937.
Paul E. Bowers, M. D., Los Angeles, Calif., died Feb. 15, 1938.
Michael A. Burns, M. D., Philadelphia, Pa., died Mar. 7, 1938.

PRESIDENT CHAPMAN.—Of the number of our friends who have left us during the past year, there was one, Dr. James V. Anglin, who was President of our Association during the year 1917-18. I will call on Dr. Clarence M. Hincks to read a memorial to Dr. Anglin. Dr. Hincks!

DR. CLARENCE M. HINCKS.—Memorial to James Vickers Anglin, President of The American Psychiatric Association, 1917-18.

Dr. James Vickers Anglin, President of The American Psychiatric Association from 1917 to 1918, died in Saint John, New Brunswick, on July 8, 1937, after a brief illness.

Dr. Anglin, a member of one of the most distinguished families in Canada, was born in Kingston, Ontario, in 1860, and graduated in Medicine from Queens University, Kingston, in 1887. He took post-graduate work in Edinburgh and became interested in psychiatry during his college days. In 1891 he joined the staff of the Verdun Asylum, Montreal—now known as The Protestant Hospital for Mental Diseases. At Verdun he came under the influence of Dr. T. J. W. Burgess, a former president of The American Psychiatric Association. For 12 years he occupied the post of Assistant Medical Superintendent at Verdun, and in 1904 was appointed Medical Superintendent of the Provincial Hospital, Saint John, New Brunswick, a position he held for 30 years.

During his tenure of office in New Brunswick, he maintained high scientific and professional ideals in the face of many difficulties that might have discouraged a man of lesser fibre. The hospital he was called upon to administer was the first mental institution in the British North American Provinces, dated back to 1832. The hospital buildings were inadequate, but the hospital site was magnificent, and was thus described by Dr. Anglin:

"The institution is commanding and unique. It towers high on the western bank of the main artery of the Province, where at the mouth of the river the fresh stream encounters the huge Fundy tide, creating the reversing falls, so typical of the state of mind of some who watch the changing waters from the hospital wards, now tossing in this direction—then in that—with placid spells intervening."

This quotation from one of Dr. Anglin's writings reflects something of the personality and character of the man. He was a philosopher, a keen student of human nature, with a sympathetic and kindly disposition that endeared him to patients and colleagues alike. During the last year of his administration a substantial provincial grant was placed at his disposal for new hospital construction, and for the extension of mental hygiene services. And so he was able to realize a number of his dreams.

Dr. Anglin's qualities of heart and mind were recognized and appreciated by his medical associates, and by citizens in many walks of life. He was elected as Provincial Secretary of the Canadian Medical Association, and was a member of the Mental Hygiene Council of New Brunswick. From 1907 to 1920, he was surgeon to the 62nd Regiment of the Saint John Fusiliers, with the rank of Major. He was an active member of Rotary, and had held the presidency of the Canadian Club.

In the passing of Dr. Anglin, Canada lost a quiet, cultured gentleman, who in an unobtrusive way had served his country well, and psychiatrists in both the United States and Canada lost a colleague who had won their respect and affection.

PRESIDENT CHAPMAN.—At this time it has been customary for the President's address to be given. It has been thought wiser this year to

postpone that address until the annual dinner on Wednesday night. To take the place of this address, we have two papers that are to be read which I am sure we will all find of great interest.

The business session adjourned at eleven-ten o'clock.

Wednesday Morning Session.

June 8, 1938.

The meeting convened at nine-forty o'clock, President Chapman presiding.

President Chapman.—The meeting will come to order.

The first on the order of the business session of the morning program is the report of the Council. There has been no Council meeting since the report made yesterday, so that the report of the Council will be postponed another 24 hours. There will be a Council meeting, which will be announced a little later.

The next on the order of business is the report of the Nominating Committee, Dr. Karl A. Menninger of that committee making the report.

Dr. Karl A. Menninger.—*Mr. President, Fellow Members:* In accordance with Article VI of the Constitution of The American Psychiatric Association, the Nominating Committee herewith reports the following nominations to the membership of the Association, to be acted upon at this ninety-fourth annual meeting in San Francisco, Calif., June 6-10, 1938:

For President, Richard H. Hutchings, M. D., New York.
For President-Elect, William C. Sandy, M. D., Pennsylvania.
For Secretary-Treasurer, Arthur H. Ruggles, M. D., Rhode Island.
For Councillors for three years:

Ross McC. Chapman, M. D., Maryland.
Glenn E. Myers, M. D., California.
Arthur P. Noyes, M. D., Pennsylvania.
Henry Woltman, M. D., Minnesota.

For Auditor for three years, Thomas A. Ratliff, M. D., Ohio.
This is submitted by

Marcus A. Curry, M. D., *Chairman,*
George F. Inch, M. D.,
William J. Tiffany, M. D.,
Earl D. Bond, M. D.,
Karl A. Menninger, M. D.

President Chapman.—Are there other nominations?

Dr. Brill.—I move you, sir, that the Secretary be instructed to cast one ballot for the election of the officers nominated.

The motion was seconded by Dr. Cheney.

PRESIDENT CHAPMAN.—The motion is made and seconded the Secretary cast one ballot for the nominees brought in by the Nominating Committee.

The motion was put to a vote and carried, and the ballot was cast.

PRESIDENT CHAPMAN.—Is there any unfinished business, Dr. Sandy?

SECRETARY SANDY.—None that I know of.

PRESIDENT CHAPMAN.—Is there any new business?

I think it would be wise to announce now that there will be a meeting of the Council tomorrow afternoon at four o'clock, the place to be announced a little later.

The second business session adjourned at nine forty-five o'clock.

ANNUAL BANQUET.

At 7 p. m. on Wednesday, June 8, 1938, the Annual Banquet occurred in the Gold Ballroom of the Fairmont Hotel at which the members and guests had the privilege and pleasure of hearing President Chapman present his most stimulating address.

Following the President's Reception, there was dancing until 1.30 a. m. with music by the Alan Dohrmann Orchestra.

THURSDAY MORNING SESSION.

JUNE 9, 1938.

The third business session convened at nine forty-five o'clock, President Chapman presiding.

PRESIDENT CHAPMAN.—The meeting will come to order, please.

The first in order this morning, and the only business item, is the election of members. I will ask Dr. Clarence Cheney, Chairman of the Board of Examiners, to give his report.

DR. CHENEY.—Mr. President, the Board of Examiners has recommended to the Council the election of 34 physicians as Associate Members, 163 physicians as Members of the Association, and has recommended the transfer of 24 present Associate Members to Membership and the transfer of 11 present Members to Fellowship, and the reinstatement of 7 former members or Fellows to good standing in the Association.

I recommend the election or the transfer or the reinstatement, respectively, of these physicians whose names are on the list which you have before you.

DR. BURLINGAME.—I move the acceptance of the report and the election and transfer and reinstatement of the candidates as presented.

The motion was seconded by Dr. Klopp.

PRESIDENT CHAPMAN.—It is moved and seconded that Dr. Cheney's report be accepted and that the changes in the status of those on the list before you be recorded as the Board of Examiners recommended.

The motion was put to a vote and carried.

MEMBERS ELECTED JUNE 9, 1938.

ASSOCIATE MEMBERS.

1. Baker, Wm. Young, M. D., Philadelphia, Pa.
2. Binder, Harold Jacob, M. D., Middletown, Conn.
3. Cohen, Louis Allan, M. D., Washington, D. C.
4. Duvall, Albert Ing, M. D., Marlboro, N. J.
5. Frank, Harold, M. D., Toronto, Ont., Canada.
6. Gericke, Otto Luke, M. D., Talmadge, Calif.
7. Ginsburg, Stewart T., M. D., Augusta, Ga.
8. Hamann, Carl H., M. D., Medical Lake, Wash.
9. Hastings, Donald W., M. D., Philadelphia, Pa.
10. Hecker, Arthur O., M. D., Woodville, Pa.
11. Hinko, Edward Nicholas, M. D., Eloise, Mich.
12. Hoffman, Jay Louis, M. D., Washington, D. C.
13. Kelling, Douglas George, M. D., White Plains, N. Y.
14. Koenig, Frank Joseph, M. D., Osawatomie, Kans.
15. Krueger, Frederick James, M. D., Lewisburg, Pa.
16. Larson, Charles Phillip, M. D., Fort Steilacoom, Wash.
17. Lebensohn, Zigmond Meyer, M. D., Washington, D. C.
18. Lewis, Wiley Davidson, M. D., Bolivar, Tenn.
19. Loehner, Conrad A., M. D., Central Islip, L. I., N. Y.
20. McKerracher, Donald Griffith, M. D., Toronto, Ont., Canada.
21. Miller, Charles W., M. D., Medical Lake, Wash.
22. Orenstein, Leo Laurence, M. D., New York, N. Y.
23. Prosser, Moorman, P., M. D., Norman, Okla.
24. Roback, Harry Nathaniel, M. D., Medical Lake, Wash.
25. Russell, John, M. D., Osawatomie, Kans.
26. Ryan, Vincent Gerard, M. D., Stockbridge, Mass.
27. Sandritter, Gilbert Lee, M. D., Norfolk, Nebr.
28. Sharp, Lewis Inman, Jr., M. D., Hartford, Conn.
29. Spohr, Louis Theodore, M. D., New York, N. Y.
30. Steele, Andrew B., M. D., Lewisburg, Pa.
31. Stephens, Ellis A., M. D., Kaneohe, Oahu, T. H.
32. Walker, Gale H., M. D., Polk, Pa.
33. Wolf, Alexander, M. D., New York, N. Y.
34. Wortis, Herman, M. D., New York, N. Y.

MEMBERS.

1. Angyal, Andras, M. D., Worcester, Mass.
2. Balser, Benjamin Harris, M. D., New York, N. Y.

3. Barbu, Valer, M. D., New York, N. Y.
4. Barrera, S, Eugene, M. D., New York, N. Y.
5. Beaman, George Henry, Jr., M. D., Stockbridge, Mass.
6. Becton, James Alvis, M. D., Birmingham, Ala.
7. Bergen, Ralph David, M. D., Milwaukee, Wis.
8. Berkenbilt, Joseph, M. D., Knoxville, Iowa.
9. Bernard, Louis Emile, M. D., Orangeburg, N. Y.
10. Bird, Percy J. S., M. D., Weyburn, Sask., Canada.
11. Blain, Daniel, M. D., New York, N. Y.
12. Bragaw, George Driver, M. D., Northampton, Mass.
13. Brikates, Peter, M. D., Brentwood, L. I., N. Y.
14. Bosselman, Beulah Chamberlain, M. D., Chicago, Ill.
15. Brown, Warren Thompson, M. D., New Haven, Conn.
16. Burns, Helen B. Rislow, M. D., Compton, Calif.
17. Campbell, Douglas O., M. D., Chicago, Ill.
18. Cheavens, Thomas Henry, M. D., Dallas, Texas.
19. Chornyak, John, M. D., Pittsburgh, Pa.
20. Clark, Edward H., M. D., Danville, Ill.
21. Clothier, Florence, M. D., Boston, Mass.
22. Cohn, Jess Victor, M. D., Hollywood, Fla.
23. Coulter, Andrew R., M. D., Weyburn, Sask., Canada.
24. Creech, Clarence Mobley, M. D., Mountain Home, Tenn.
25. Dangeleisen, William Warren, M. D., Cleveland, Ohio.
26. Dey, William Frederick, M. D., New York, N. Y.
27. Doty, Edwin John, M. D., New York, N. Y.
28. Drayer, Calvin Searle, M. D., Philadelphia, Pa.
29. Drewry, Patrick Henry, Jr., M. D., White Plains, N. Y.
30. Eaddy, Albert May, M. D., Lexington, Ky.
31. Firor, Marion P., M. D., Los Angeles, Calif.
32. Foley, Floyd K., M. D., Lexington, Ky.
33. Flaherty, James A., M. D., Philadelphia, Pa.
34. Fong, Theodore C. C., M. D., Washington, D. C.
35. Foxe, Arthur Norman, M. D., Glen Falls, N. Y.
36. Freyermuth, Otto George, M. D., San Francisco, Calif.
37. Friedman, Emerick, M. D., Greenwich, Conn.
38. Gagnon, Solomon, M. D., Waltham, Mass.
39. Gavigan, Arthur John, M. D., Worcester, Mass.
40. Godbey, Lemuel J., M. D., Lexington, Ky.
41. Gold, Louis Henry, M. D., Hartford, Conn.
42. Golden, Louis A., M. D., New Orleans, La.
43. Goldstein, Kurt, M. D., New York, N. Y.
44. Gottlieb, Bernhardt S., M. D., New York, N. Y.
45. Griffin, John Douglas, M. D., Toronto, Ont., Canada.
46. Gundry, Rachel Krebs, M. D., Baltimore, Md.
47. Hagerty, Thomas W., M. D., Camarillo, Calif.
48. Hall, William Dewey, M. D., Raleigh, N. C.
49. Halvorsen, Clifford, M. D., Worcester, Mass.

50. Harms, Herbert, M. D., Catonsville, Md.
51. Harper, Edward O'Neil, M. D., Cleveland, Ohio.
52. Harpham, Dorothy, M. D., New York, N. Y.
53. Henry, Edna Pentoka, M. D., Taft, Okla.
54. Hepler, Clarence R., M. D., Osawatomie, Kans.
55. Hernandez, Rafael, M. D., Nashville, Tenn.
56. Hershey, Lynn N., M. D., Detroit, Mich.
57. Hibbs, Samuel G., M. D., Woodville, Pa.
58. Himler, Leonard E., M. D., Ann Arbor, Mich.
59. Hopgood, Ella Pearl, M. D., Dartmouth, N. S., Canada.
60. Hunsicker, Horace Higbee, M. D., Allentown, Pa.
61. Hutchens, Wendell H., M. D., Portland, Ore.
62. Hutton, Arthur D., M. D., Marion, Va.
63. Jaeger, Ruth Emilie, M. D., New York, N. Y.
64. Johnson, Edward, M. D., Selkirk, Man., Canada.
65. Johnson, Emmett Root, M. D., Gulfport, Miss.
66. Kempf, Grover R., M. D., New York, N. Y.
67. Kepner, Richard Eugene D., M. D., Kaneohe, Oahu, T. H.
68. Kernkamp, Ralph Frederick, M. D., Eloise, Mich.
69. Klein, Henriette R., M. D., New York, N. Y.
70. Kleiner, Solomon, M. D., Middletown, N. Y.
71. Langford, William Siddon, M. D., New York, N. Y.
72. Le Baron, Robert O., M. D., Talmadge, Calif.
73. Lemere, Frederick, M. D., Seattle, Wash.
74. Levine, Matthew, M. D., Ward's Island, N. Y.
75. Liles, Lonnie Carl, M. D., Raleigh, N. C.
76. Lippman, Hyman S., M. D., St. Paul, Minn.
77. Litteral, Emmett B., M. D., San Francisco, Calif.
78. Loeb, William Alexander, M. D., Lyons, N. J.
79. Luce, Henry Ashley, M. D., Detroit, Mich.
80. McConnell, Whitman Carlisle, M. D., St. Petersburg, Fla.
81. McCullagh, William H., M. D., Jacksonville, Fla.
82. McDermott, Neil Thomas, M. D., Clevland, Ohio.
83. McDowell, Marvin Alford, M. D., Logansport, Ind.
84. McGreevy, Joan Frances, M. D., Newark, N. Y.
85. McKendree, Charles A., M. D., New York, N. Y.
86. Mac Kay, Robert W. M., M. D., Dartmouth, N. S., Canada.
87. Madden, John J., M. D., Chicago, Ill.
88. Matas, Isadore Jack, M. D., Selkirk, Man., Canada.
89. Mayer, Frederick, M. D., Columbia, S. C.
90. Mayer, William, M. D., Amityville, L. I., N. Y.
91. Metcalfe, Grant E., M. D., Helmuth, N. Y.
92. Meyer, George I., M. D., N. Little Rock, Ark.
93. Morrison, Russell C., M. D., Madison, Wis.
94. Morrow, George William, M. D., Kankakee, Ill.
95. Mosse, Eric P., M. D., New York, N. Y.
96. Moynan, Richard Samuel, M. D., Athens, Ohio.

97. Musa, Agha B., M. D., Huntington, W. Va.
98. Naples, Angelo Samuel, M. D., Knoxville, Iowa.
99. Nichols, Ira C., M. D., Providence, R. I.
100. O'Connell, James J., M. D., Greystone Park, N. J.
101. Oliver, Wrenshall Alexander, M. D., San Francisco, Calif.
102. Owen, John Fletcher, M. D., Raleigh, N. C.
103. Parsons, Ernest H., M. D., Washington, D. C.
104. Phifer, Robert J., M. D., Wernersville, Pa.
105. Pigott, Albert William, M. D., Skillman, N. J.
106. Pollack, Benjamin, M. D., Rochester, N. Y.
107. Ranger, Conrad A., M. D., Concord, N. H.
108. Ravine, William, M. D., Cincinnati, Ohio.
109. Render, Norman Davis, M. D., Iowa City, Iowa.
110. Rew, Kenneth G., M. D., New York, N. Y.
111. Rice, George D., M. D., Camp Custer, Mich.
112. Richter, Helen Grace, M. D., New Haven, Conn.
113. Ripley, Herbert S., Jr., M. D., New York, N. Y.
114. Robertson, James Carter, M. D., Chattahoochee, Fla.
115. Robertson, Robert C., M. D., Dayton, Ohio.
116. Rodis, Isadore, M. D., Washington, D. C.
117. Rosenbliett, Sidney, M. D., Northampton, Mass.
118. Rossen, Ralph, M. D., St. Peter, Minn.
119. Rothman, Herman Robert, M. D., Cheyenne, Wyo.
120. Rubin, Milton M., M. D., Indianapolis, Ind.
121. Rupp, Charles, M. D., Howard, R. I.
122. Safier, Benno, M. D., Agnew, Calif.
123. Sandler, Samuel A., M. D., Jersey City, N. J.
124. Sartin, John M., M. D., Atlanta, Ga.
125. Scharf, L. Edward, M. D., Northport, L. I., N. Y.
126. Schultz, Kathryn Louise, Howard, R. I.
127. Seaman, Gilbert E., M. D., Winnebago, Ill.
128. Sharry, Charles F., M. D., Ellis Island, N. Y.
129. Sielke, Burtrum C., M. D., Minneapolis, Minn.
130. Sielke, Eugene L., M. D., Howard, R. I.
131. Skorodin, Bernard, M. D., Manteno, Ill.
132. Sloane, Paul, M. D., Philadelphia, Pa.
133. Smalldon, John Lewis, M. D., White Plains, N. Y.
134. Smith, Alonzo F., M. D., Central Islip, N. Y.
135. Snoops, George J., Jr., M. D., Central Islip, N. Y.
136. Somers, Melvin Ralph, M. D., San Francisco, Calif.
137. Stewart, Olive Jean, M. D., Toronto, Ont., Canada.
138. Strong, Willis Alexander, M. D., Willard, N. Y.
139. Sweet, Theodore Allen, M. D., Toronto, Ont., Canada.
140. Tarachow, Sidney, M. D., New York, N. Y.
141. Tartaglino, Francis J., M. D., Washington, D. C.
142. Thomas, Giles Waldo, M. D., New York, N. Y.
143. Thompson, Thomas W., M. D., Traverse City, Mich.

144. Turow, Irving L., M. D., Peoria, Ill.
145. Ulrich, Alfred C., M. D., Buffalo, N. Y.
146. Urse, Vladimir G., M. D., River Forest, Ill.
147. Valens, William L., M. D., Los Angeles, Calif.
148. Vincent, Nicholas F., M. D., Boston, Mass.
149. Vogel, Victor Hugh, M. D., Lexington, Ky.
150. Wagenhalls, Franklin C., M. D., Columbus, Ohio.
151. Waterman, John Howard, M. D., Ingleside, Nebr.
152. Westlund, Norman, M. D., Traverse City, Mich.
153. Wicks, Clarence Arthur, M. D., Concord, Ont., Canada.
154. Wexburg, Leopold Erwin, M. D., New Orleans, La.
155. Wiggers, Herbert August, M. D., Philadelphia, Pa.
156. Williams, Harold W., M. D., Howard, R. I.
157. Willie, James A., M. D., Oklahoma City, Okla.
158. Wilson, Gerald Eric, M. D., Guelph, Ont., Canada.
159. Wilson, Nat J., M. D., Bedford, Mass.
160. Yarrell, Zuleika, M. D., New York, N. Y.
161. Yearick, George Irwin, M. D., Mayview, Pa.
162. Young, Richard H., M. D., Omaha, Nebr.
163. Zawacki, Bruno E., M. D., Northampton, Mass.

TRANSFER FROM ASSOCIATE TO MEMBER.

1. Ackermann, Nathan Ward, M. D., Ossining, N. Y.
2. Alexander, George H., M. D., Providence, R. I.
3. Baganz, Crawford Norbert, M. D., Lyons, N. J.
4. Birnbaum, Leo, M. D., N. Chicago, Ill.
5. Blau, Abraham, M. D., New York, N. Y.
6. Cammarata, Joseph A., M. D., Danville, Ill.
7. Cohen, Louis Harold, M. D., Worcester, Mass.
8. Crowley, Ralph M., M. D., Washington, D. C.
9. Dehne, Theodore L., M. D., Philadelphia, Pa.
10. Doyle, Arthur Manning, M. D., Kingston, Ont., Canada.
11. Frank, Richard Lionel, M. D., New York, N. Y.
12. Friedman, Jacob Henry, M. D., Bronx, N. Y.
13. Gunn, Donald Ross, M. D., New Toronto, Ont., Canada.
14. Henninger, James Murdoch, M. D., Pittsburgh, Pa.
15. Kleinerman, Morris, M. D., Washington, D. C.
16. Lovel, Harold William, M. D., Baltimore, Md.
17. Mieth, Nita, M. D., Chicago, Ill.
18. Miller, Milton L., M. D., Chicago, Ill.
19. Mitchell, H. Douglas, M. D., New Toronto, Ont., Canada.
20. Vestermark, Seymour D., M. D., Lexington, Ky.
21. Warson, Samuel Russell, M. D., New Haven, Conn.
22. Watson, James, M. D., Worcester, Mass.
23. Williams, Clifford L., M. D., Logansport, Ind.
24. Winlock, Rachael M., M. D., Philadelphia, Pa.

TRANSFER FROM MEMBER TO FELLOW.

1. Aten, Eugene L., M. D., Compton, Calif.
2. Billings, Edward G., M. D., Denver, Colo.
3. Brady, Emory John, M. D., Colorado Springs, Colo.
4. Briehl, Walter, M. D., New York, N. Y.
5. Campbell, M. Madison, M. D., Hartford, Conn.
6. Corrin, Kenneth M., M. D., Wernersville, Pa.
7. Guttmacher, Manfred S., M. D., Baltimore, Md.
8. Kubie, Laurence S., M. D., New York, N. Y.
9. Menzies, Ernest C., M. D., St. John, N. B., Canada.
10. Moore, Clifford D., M. D., Newtown, Conn.
11. Zeller, Charles Adams, M. D., Waymart, Pa.

REINSTATEMENTS.

1. Baird, John H., M. D., N. Little Rock, Ark.
2. Dunham, Sydney A., M. D., Buffalo, N. Y.
3. Hill, Jesse Coram, M. D., Knoxville, Tenn.
4. Houston, Angela B., M. D., Northampton, Mass.
5. Keller, William Noble, M. D., Ft. Steilacoom, Wash.
6. McDaniel, Frederick L., M. D., Washington, D. C.
7. Podall, Harry C., M. D., Norristown, Pa.

The business session adjourned at ten forty-six o'clock.

FRIDAY MORNING SESSION.

JUNE 10, 1938.

The final business session convened at nine-forty o'clock, President Chapman presiding.

PRESIDENT CHAPMAN.—There is one small item of business. The Secretary-Treasurer will read the report of the Council.

SECRETARY SANDY.—The Council met in the Fairmont Hotel at 4.00 p. m., Thursday, June 9, 1938. Dr. Chapman, the President, presided. There were 16 members present.

The Council voted to accept for inclusion in the printed proceedings the report of the Committee on Public Education and that of the Committee on Psychiatry in Medical Education, the latter as modified.

A resolution of the Section on Convulsive Disorders and the American Chapter of the International League Against Epilepsy was read and the Council voted to retain it for further consideration at the December meeting.

The Secretary read a communication from Dr. William D. Cutter, Secretary of the Council on Medical Education and Hospitals of the A. M. A., suggesting an informal conference in regard to the formulation of more effective standards for approved residencies in psychiatry.

Upon recommendation of the Council, the President appointed Dr. Campbell and Dr. Treadway to represent the Association at such a conference with Dr. Cutter.

Upon motion of Dr. Cheney, seconded by Dr. Treadway, the Council voted that in view of the audit of the books and records of the Association by a certified public accountant for the period from April 16, 1937, to May 14, 1938, it will be unnecessary for a further action by the Auditors of the Association.

The Council approved the appointment of Dr. Nolan D. C. Lewis, of New York, to the Board of Examiners to succeed Dr. Cheney, whose term has expired.

Upon motion of Dr. Hutchings, seconded by Dr. Hincks, Dr. William E. Gardner, of Kentucky, was elected Chairman of the Board of Examiners.

The Council nominated to the American Board of Psychiatry and Neurology the following:

Dr. Adolf Meyer.
Dr. C. Macfie Campbell.
Dr. Franklin G. Ebaugh.
Dr. Edward A. Strecker.

The Council voted to recommend Dr. C. Macfie Campbell as the representative of the Association to the American Association for the Advancement of Science.

The Council voted the nomination of Dr. Harry Stack Sullivan, of New York, to represent the Association on the National Research Council to succeed Dr. Whitehorn, whose term has expired.

The Council elected the Executive Committee to consist of the following officers:

Dr. Richard H. Hutchings, President.
Dr. William C. Sandy, President-Elect.
Dr. Arthur H. Ruggles, Secretary-Treasurer.
Dr. Ross McC. Chapman.
Dr. Clarence O. Cheney.

The Secretary reported the election of the following Section officers for the ensuing year:

Section on Convulsive Disorders:
Douglas A. Thom, M. D., Chairman, Boston, Mass.
David C. Wilson, M. D., Secretary, University of Virginia Medical School, Virginia.

Section on Forensic Psychiatry:
LeRoy M. A. Maeder, M. D., Chairman, Philadelphia, Pa.
James L. McCartney, M. D., Secretary, Boston, Mass.

Section on Mental Deficiency:
C. C. Kirk, M. D., Chairman, Orient, Ohio.
Oscar J. Raeder, M. D., Secretary, Boston, Mass.

Section on Psychoanalysis:
Nolan D. C. Lewis, M. D., Chairman, New York, N. Y.
Clarence P. Oberndorf, M. D., Secretary, New York, N. Y.

The President reported that in accordance with the suggestion of Dr. James K. Hall, through Dr. Collier, a cablegram of sympathy was sent to Sigmund Freud by the Committee on Resolutions.

The Council voted that the Chairman of the Nursing Committee be authorized to state that the standards for affiliated postgraduate courses proposed in California meet the approval of the Council.

On motion of Dr. Hutchings, the Council authorized the incoming President of the Association to appoint a special committee to study the recommendations made by Dr. Chapman in his presidential address and to endeavor to devise ways and means of application, making a preliminary report at the December meeting of the Council.

Dr. Hamilton presented the following resolution which was adopted by the Council:

The American Psychiatric Association meeting in San Francisco June 6 to 10, 1938, records its sympathy with the men of scientific mind whose studies in biology and medicine are threatened by hostile legislation, such as the proposed state humane pound law. At a time when new and promising types of treatment of several mental disorders are under investigation, it is most important that the effects of the drugs used shall be studied in other animals before they are used unrestrictedly on human beings.

The Council adjourned at 5.45 p. m.

PRESIDENT CHAPMAN.—You have heard the final report of the Council for this year. May I ask what you will do with it?

DR. KARL A. MENNINGER.—I move its adoption.

The motion was seconded by Dr. Rosanoff, was put to a vote and carried.

The meeting went into Section I of the scientific program at nine-forty o'clock, and reconvened at twelve-forty o'clock.

PRESIDENT CHAPMAN.—The next item is the report of the Committee on Resolutions, Dr. Karl A. Menninger, Chairman.

Dr. Karl A. Menninger read the report of the Resolutions Committee (report turned over to Dr. Sandy).

DR. PARTLOW.—Mr. Chairman, I move the adoption of the report as submitted by Dr. Menninger.

The motion was seconded by Dr. Parsons, was put to a vote and carried.

PRESIDENT CHAPMAN.—The next event, and a most happy one, is the induction of our new President into office. I will appoint Dr. Philip Smith,

of New York, and Dr. John I. McKelway, of Idaho, who, like myself, was formerly a New York State hospital man, to conduct Dr. Hutchings to the platform.

Drs. Smith and McKelway escorted the newly elected President, Dr. Richard H. Hutchings, to the platform.

PRESIDENT CHAPMAN.—I will ask Dr. Frederick Parsons, of New York, to present our new President.

DR. FREDERICK W. PARSONS.—*Mr. President, Ladies and Gentlemen:* Not always does a duty become a pleasure, but this morning I discharge an obligation with the greatest satisfaction. I am asked formally to present to you a gentleman with whom I have long worked and for whom I have greatest respect.

It is my pleasure to present to you one of the shining lights of this ancient and honorable Society, long a trusted servant of a great state, Southern born, of Northern residence, Western in his progressiveness, and Continental in his interest, known as an able administrator, but more particularly noted for his gentleness and his broad sympathy.

When most persons would be disposed to rest on their laurels, to look back on honors the years have brought, your new President has pushed forward, keeping ever busy that inquiring mind which works so efficiently behind the quiet exterior which he presents to the world.

In 90 years many great men have presided over these meetings. To that long line of distinguished predecessors now comes, in the fullness of time, another man of distinction, and I present to you a gentleman, the able, the erudite Superintendent of the Utica State Hospital, the scholarly Richard H. Hutchings, long loved and respected by those who know him intimately and now to receive from your hands the enduring honor of presiding over your deliberations.

I am happy to present to you Dr. Richard H. Hutchings!

The audience arose and applauded.

PRESIDENT CHAPMAN.—Dr. Hutchings, as one who received his first contact and his first training at the Utica State Hospital, that fine old institution over which you preside, I am sure you will understand the peculiar pleasure that is mine in extending to you herewith the gavel, the instrument of authority, the symbol, and in assuring you of my most hearty support in anything I may be able to do to make your tenure of office a happy one. You have all our good wishes.

Thank you!

President Hutchings assumed the chair.

PRESIDENT HUTCHINGS.—Thank you, Dr. Chapman and Dr. Parsons, for your very complimentary remarks and for your offer of assistance.

For me to say that I am grateful to you for the honor you have conferred upon me is but a commonplace expression of the emotions which per-

vade me at this moment, emotions which are genuine but which the tongue is an awkward member to express.

It is a kindly practice on your part to give your intended President a year's notice of what you are planning to do. It gives him the opportunity to orient himself, as it were, and to realize that when you confer honor, you also exact responsibility. That is an emotion which preoccupies my thoughts at this moment. To have the privilege of directing the activities of this Association and to preside over the policies, to carry on the honorable traditions that have been a heritage of the Association for nearly a hundred years, is a task which will tax my poor abilities to the utmost. In accepting this high office, I pledge my best endeavor and my most conscientious effort throughout the year. Not for a moment would I have the temerity to feel competent to accomplish this successfully but for the assistance which I know I shall receive from the officers of the Association, from the board of Councillors, from the Chairmen of the various Committees. Upon their wisdom and experience I shall draw heavily. The high mark set by our retiring President will be an inspiration to me. He has set the mark so high that to emulate it will require my best endeavors and to exceed it is not possible.

I have at this time a pleasant privilege to perform in bestowing upon Dr. Chapman, Retiring President, this emblem presented by the Association in recognition of its appreciation of the high services which he has rendered throughout the year. Dr. Chapman, will you step forward and let me fasten this upon your coat?

Retiring President Chapman received the medal from President Hutchings.

PRESIDENT HUTCHINGS.—In closing this session of the Association, let me express the wish for your health and prosperity throughout the coming year and the hope that I may meet each one of you at the next meeting of the Association to be held in Chicago on May 8 of next year.

I now declare the ninety-fourth annual meeting of The American Psychiatric Association adjourned.

The meeting adjourned at twelve fifty-five o'clock.

The total registration was 1076, of which 284 were members.

WILLIAM C. SANDY, M. D., *Secretary-Treasurer.*

PROCEEDINGS SCIENTIFIC SESSIONS

OF THE

NINETY-FOURTH ANNUAL MEETING

OF THE

AMERICAN PSYCHIATRIC ASSOCIATION.

JUNE 6-10, 1938, SAN FRANCISCO, CALIFORNIA.

JOINT SESSION OF THE SECTION ON CONVULSIVE DISORDERS AND THE AMERICAN CHAPTER OF THE INTERNATIONAL LEAGUE AGAINST EPILEPSY.

MONDAY MORNING SESSION, JUNE 6, 1938.

Dr. S. Bernard Wortis presiding.

Effects of Metrazol Convulsions on the Cerebrospinal Fluid, by Drs. Mona Spiegel-Adolf and Herbert Freed.

Correlation of Insulin Shock and Convulsive States Relative to Symptoms and Site of Greatest Disturbance in the Central Nervous System, by Drs. Samuel D. Ingham, J. M. Nielsen and Karl O. Von Hagen.

Metrazol Convulsions in Man, Clinical and Biochemical Studies," by Drs. S. Katzenelbogen, Morris W. Brody, M. Hayman and Ellis Margolin. Discussion by Drs. Foster Kennedy, Jules H. Masserman, Emerick Freedman, William G. Lennox, S. Bernard Wortis, Herbert Freed (closing), Samuel D. Ingham (closing) and Solomon Katzenelbogen (closing).

The Conditioning Effect of Epileptic Seizures Upon the Human Cerebral Cortex, by Drs. Wilder Penfield and Edwin Boldrey.

Analogies and Opposites in Schizophrenia and Epilepsy: Electroencephalographic and Clinical Studies, by Drs. Herbert H. Jasper, Charles P. Fitzpatrick and Philip Solomon.

The Electroencephalogram in Psychomotor Epilepsy, by Drs. Frederic A. Gibbs, Erna L. Gibbs and William G. Lennox. Discussion by Drs. Foster Kennedy, Hallowell Davis, Arthur H. Ruggles, Samuel D. Ingham, Max H. Weinberg, Andrew J. Akelaitis, Solomon Katzenelbogen, Wilder Penfield (closing), Herbert H. Jasper (closing), and William G. Lennox (closing).

Studies on Tissue Permeability as a Factor in Epilepsy: The Mode of Action of Brilliant Vital Red in Epilepsy, by Dr. Robert B. Aird. Discussion by Drs. S. Bernard Wortis, Robert B. Aird, Eugene Ziskind, Wilder Penfield and Robert B. Aird (closing).

MONDAY AFTERNOON SESSION, JUNE 6, 1938.

Dr. William G. Lennox presiding.

Contribution to the Chemistry of Blood and Spinal Fluid in Epilepsy with Particular Reference to the Effect of Bromides and Luminal, by Dr. Frederick Proescher.

The Inadequacy of the Evidence for Hereditary Predisposition in Epilepsy, by Drs. Eugene Ziskind and Esther Somerfeld-Ziskind, discussion by Drs. Aaron J. Rosanoff, William G. Lennox and Eugene Ziskind.

The Effect of Phenobarbital on the Mentality of Epileptics, by Drs. Esther Somerfeld-Ziskind and Eugene Ziskind.

Election of Section Officers

Tribute in Memory of Dr. Dan S. Renner.

Convulsive States with Evidence of Brain Hemiatrophy, by Drs. Louis Casamajor and Robert W. Laidlaw.

A Study of Convulsions Associated with Verified Focal Intracranial Lesions, by Drs. Cobb Pilcher and Edward F. Parker, Jr. Discussion by Drs. Wilder Penfield, William G. Lennox and Cobb Pilcher (closing).

Clinical Findings in Relation to Roentgenographic and Neurosurgical Procedures in Epilepsy, by Drs. Thomas S. P. Fitch, Albert W. Pigott and Samuel M. Weingrow.

The Emotional Element in Epilepsy, by Dr. Ralph C. Hamill. Discussion by Drs. S. Bernard Wortis, William G. Lennox and Ralph C. Hamill (closing).

MONDAY EVENING SESSION, JUNE 6, 1938.

Dr. G. Kirby Collier presiding.

High Speed Motion Pictures of Convulsions, by Dr. S. Bernard Wortis.

A Public Health Approach to the Problem of Convulsive Disorders, by Drs. B. T. McGhie and C. R. Myers.

Resolution presented by Dr. Lennox.

Allergic Epilepsy, by Dr. Foster Kennedy.

Remarks by Dr. Adolf Meyer.

SECTION ON FORENSIC PSYCHIATRY, MONDAY MORNING SESSION, JUNE 6, 1938.

Dr. Winfred Overholser presiding.

The School's Responsibility in Delinquency, by Dr. Sara G. Geiger. Discussion by Drs. William W. Young, A. L. Rea, H. S. Lippman and Sara G. Geiger (closing).

Juvenile Delinquency in Twins, by Dr. Aaron J. Rosanoff. Discussion by Drs. Nolan D. C. Lewis, R. A. Greene and Aaron J. Rosanoff (closing).

Children and Adolescents Who Kill, by Drs. Lauretta Bender and Frank J. Curran. Discussion by Drs. Henry H. Dixon and Lauretta Bender (closing).

The Problems of Delinquency on the West Coast, by Dr. Edward W. Twitchell. Discussion by Dr. Forrest N. Anderson.

MONDAY AFTERNOON SESSION, JUNE 6, 1938.

Dr. Overholser presiding.

Classification and Treatment of Sex Offenders, by Dr. Garland H. Pace. Discussion by Drs. Fred Adams and A. W. Hackfield.

Homicidal Sexuality, by Dr. Gregory Zilboorg. Discussion by Drs. A. A. Brill and Gregory Zilboorg (closing).

The Sex Criminal and His Endocrines, by Dr. Clifford A. Wright. Discussion by Dr. A. Hauser.

The Criminal in Court, by Dr. Edward H. Williams. Discussion by Drs. B. W. Black, Max H. Weinberg, Winfred Overholser, and Edward H. Williams (closing).

Sentencing the Criminal, by Judge Frank M. Ogden.

SECTION I. TUESDAY MORNING SESSION, JUNE 7, 1938.

President Chapman presiding.

The Concept of Hysteria, by Dr. Paul Schilder. Discussion by Drs. Adolf Meyer and Paul Schilder (closing).

Therapy and Pseudo Therapy in Psychiatry: An Outline, by Dr. Harry Stack Sullivan. Discussion by Dr. Gregory Zilboorg.

TUESDAY AFTERNOON SESSION, JUNE 7, 1938.

President Chapman presiding.

Psychosomatic History and Techniques of Examination, by Dr. H. Flanders Dunbar.

Notes on Identification and Oral Traits in Relation to Character with Case Illustration, by Dr. Edward S. Tauber.

The Psychic Component of the Disease Process (Including Convalescence) in Cardiac, Diabetic and Fracture Patients, by Dr. H. Flanders Dunbar. Discussion by Drs. William J. Kerr, Edward G. Billings, Clarence O. Cheney, Nolan D. C. Lewis, Karl A. Menninger, Clarence P. Oberndorf, Jacob Kasanin, Douglas Gordon Campbell, Edward S. Tauber (closing) and H. Flanders Dunbar (closing).

Medicine and Psychiatry, by Dr. Laurence Selling.

An Organized Treatment Approach to Morbid Compulsive States, by Dr. Henry H. Dixon. Discussion by Drs. Arthur L. Bloomfield, Oskar Diethelm, Arnold W. Hackfield and Henry H. Dixon (closing).

JOINT SESSION WITH SECTION ON PSYCHOANALYSIS AND THE AMERICAN PSYCHOANALYTICAL ASSOCIATION, WEDNESDAY MORNING SESSION JUNE 8, 1938.

President Chapman at first presiding, later Dr. Franz Alexander.

Determinism in Psychiatry and Psychoanalysis, by Dr. A. A. Brill. Discussion by Drs. Clarence O. Cheney, Adolf Meyer, Paul Schilder, Ira M. Altshuler, Franz Alexander and A. A. Brill (closing).

An Outline for Recording the Dynamic Structure of Personality, by Dr. Karl A. Menninger. Discussion by Drs. A. A. Brill and Thomas M. French.

Some Unsuccessful Reactions with Psychoanalytic Therapy, by Drs. Gerald R. Jameison and Edwin D. McNeil. Discussion by Drs. Thomas M. French, Ernst Simmel, Karl A. Menninger, Clarence P. Oberndorf and Edwin D. McNeil (closing).

The Organization of Psychoanalytic Procedure in the Hospital, by Dr. Dexter M. Bullard. Discussion by Drs. Robert P. Knight, Harry Stack Sullivan and Dexter M. Bullard (closing).

WEDNESDAY AFTERNOON SESSION, JUNE 8, 1938.

Dr. Arthur P. Noyes presiding.

Kymograph Records of Neuromuscular (Respiratory) Patterns in Relation to Behavior Disorders, by Dr. Trigant Burrow. Discussion by Dr. Hans Syz.

Pitfalls in Industry for the Psychiatrist, by Dr. Lydia G. Giberson.

Discussion by Drs. C. Charles Burlingame, George S. Johnson, Arthur H. Ruggles, Foster Kennedy, Ernest E. Hadley and Lydia G. Giberson (closing).

Physiological Studies in Experimental Insulin and Metrazol Shock, by Dr. G. Edward Hall and Sir Frederick Banting. Discussion by Drs. Solomon Katzenelbogen, Louis Casamajor, H. E. Himwich, Julius Steinfeld and G. Edward Hall (closing).

Behavior Problems in Negro Children, by Dr. Lauretta Bender. Discussion by Dr. W. D. Partlow.

Homosexuality: An Attempt to Solve the Problem of Human Difference, by Dr. Frederick H. Allen.

THURSDAY MORNING SESSION, JUNE 9, 1938.

President Chapman at first presiding, later Dr. Ebaugh.

Friendship Patterns in the State Mental Hospital; a Sociological Approach, by Dr. Howard Rowland. Discussion by Drs. Harry Stack Sullivan, Clarence O. Cheney, Chapman J. Milling, D. Ewen Cameron and Howard Rowland (closing).

A Historical View of Somatic Treatment in Psychiatry, by Dr. Oskar Diethelm. Discussion by Dr. D. Ewen Cameron.

The "Non-Specific" Treatment of Dementia Præcox, by Drs. Clarence O. Cheney and Patrick H. Drewry, Jr. Discussion by Drs. Richard H. Hutchings, Nolan D. C. Lewis and A. A. Brill.

The Results of Eighteen Months of Benzedrine Sulfate Therapy, by Drs. Eugene Davidoff and Edward C. Reifenstein. Discussion by Dr. Alexander Simon.

Autonomic Reactions Related to Physiologic "Resistance" in Psychotic States Before, During and After Insulin and Metrazol Therapy, by Drs. Alfred P. Solomon and Chester W. Darrow and Melvin Blaurock.

Some Physiologic Observations Following Induced Convulsions, by Dr. Leo L. Orenstein.

Some Biochemical Aspects of the New Treatments for Schizophrenia, by Dr. Julius Steinfeld. Discussion by Dr. H. E. Himwich.

THURSDAY AFTERNOON SESSION, JUNE 9, 1938.

President Chapman at first presiding, later Dr. Gardner.

The Pharmacological Shock Treatment of Schizophrenia: A Statistical Study of Results in the New York State Hospital, by Dr. John R. Ross.

Use of Metrazol in the Functional Psychoses, by Drs. Charles F. Read, D. Louis Steinberg, Erich Liebert and Isidore Finkelman.

Shock Therapy in Schizophrenia, by Dr. Charles W. Miller, Jr.

Experience with the Camphor Metrazol Treatment of Schizophrenia at the Buffalo City Hospital, by Dr. Alfred L. C. Ulrich.

Experience with the Pharmacological Shock Treatment of Schizophrenia: With Notes on the Use of Picrotoxin, by Drs. Guy H. Williams, Guy H. Williams, Jr., Helen M. Kingsbury and David E. Bixby.

Results and Newer Techniques in the Pharmacological Shock Treatment of Schizophrenia, by Drs. Karl M. Bowman, Hyman Fingert, Julia Kagan and Joseph Wortis.

The Insulin Treatment in Schizophrenic Patients: Clinical and Biochemical Studies, by Drs. S. Katzenelbogen, Herbert Harms, Ruth Willmans, S. Barkoff, Morris W. Brody and M. Hayman.

Insulin-Hypoglycemia Treatment of Schizophrenia: Results and Follow-up Studies of 106 Cases, by Drs. E. O. Niver, S. Weisz and T. H. Harris. Discussion by Drs. Manfred Sakel, Horace Gray, H. Clare Shepardson, Appleton H. Pierce and Joseph Wortis.

FRIDAY MORNING SESSION, JUNE 10, 1938.

President Chapman presiding, also Dr. Partlow for a time.

Depressions which Followed Apparent Success, by Dr. Chester L. Carlisle. Discussion by Drs. Edwin W. Allen, Aaron J. Rosanoff and Chester L. Carlisle.

A Study After Recovery, of a Benign Psychosis by the Patient and her Physician, by Drs. J. A. Kindwall and Elaine F. Kinder. Discussion by Drs. Adolf Meyer and J. A. Kindwall.

Early Schizophrenia, by Dr. D. Ewen Cameron. Discussion by Drs. Harry Stack Sullivan, Anita Mary Muhl and D. Ewen Cameron.

The Reaction of Psychiatric Patients to Physical and Neurological Examinations, by Dr. Norman Reider. Discussion by Drs. James H. Huddleson, Solomon Katzenelbogen and Norman Reider.

Exhaustion Due to Mental Excitement, by Dr. Chapman J. Milling. Discussion by Dr. Garland H. Pace.

SECTION II. STUDIES IN PROGNOSIS. TUESDAY AFTERNOON SESSION, JUNE 7, 1938.

Dr. R. H. Hutchings, President Elect, presiding.

Follow Up Study of 100 Cases of Psychoses and Neuroses, by Drs. J. H. Masserman and H. T. Carmichael, University of Chicago Clinics, Cihcago, Ill. Discussion by Drs. Edwin E. McNeil, Alfred Solomon, Paul Schilder, Ralph C. Hamill, A. A. Brill and J. H. Masserman.

Prognosis in Schizophrenia: Evaluation of Possible Determining Factors, by Drs. William Malamud and N. D. Render (by invitation), Iowa State Psychopathic Hospital, Iowa City, Iowa. Discussion by Drs. Arthur P. Noyes, Max H. Weinberg, Albertine L. Rea, Alfred Solomon, Jacob Kasanin and William Malamud.

Prognosis in Schizophrenia: A Preliminary Report, by Drs. John Romano (by invitation) and Franklin G. Ebaugh, M. D., Denver, Colo. Discussion by Drs. Albert C. Buckley, B. C. Schiele, William Malamud and John Romano.

Psychoses Among College Students, by Dr. Theophile Raphael, Ann Arbor, Mich. Discussion by Drs. Arthur H. Ruggles and Amy Stannard.

Prognosis in General Paresis, by Dr. John L. Haskins, M. D., Portland, Ore. Discussion by Drs. Clarence O. Cheney and Clarence A. Neymann.

SYMPOSIUM ON PSYCHIATRIC EDUCATION. WEDNESDAY MORNING SESSION, JUNE 8, 1938.

Dr. Ebaugh presiding.

Introductory Remarks by the Chairman, Dr. Franklin G. Ebaugh, University of Colorado, Denver, Colo.

Teaching of Psychobiology, by Dr. Theodore A. Watters, Tulane University, New Orleans, La.

Teaching of Psychopathology, by Dr. Oskar Diethelm, Cornell University, New York, N. Y.

Teaching of Clinical Psychiatry, by Dr. Nolan D. C. Lewis, Columbia University, New York, N. Y.

Clerkship Teaching, by Dr. B. C. Schiele (by invitation), University of Minnesota, Minneapolis, Minn.

Out-Patient Clinic Teaching, by Dr. George S. Johnson, Stanford University, San Francisco, California.

Liaison Psychiatry and the Internship, by Dr. Edward G. Billings, University of Colorado, Denver, Colo.

Discussion by Drs. Adolf Meyer, Johns Hopkins University, Baltimore, Md., Edward W. Twitchell, San Francisco, Calif., G. Alexander Young, Omaha, Nebr. and C. Macfie Campbell, Boston Mass.

JOINT SESSION ON PSYCHOANALYSIS AND THE AMERICAN PSYCHOANALYTIC ASSOCIATION, WEDNESDAY AFTERNOON SESSION, JUNE 8, 1938.

Dr. Nolan Lewis presiding.

Emotional Factors in Essential Hypertension, by Dr. Franz Alexander, Chicago, Ill.

Hostility in Cases of Essential Hypertension, by Dr. Leon J. Saul, Institute for Psychoanalysis, Chicago, Ill. Discussion by Drs. Hallowell Davies, Alfred Solomon and Ernst Simmel.

Psychogenic Factors in Asthma, Dr. Thomas M. French, and collaborators, Chicago, Ill. Discussion by Drs. Bernhard Berliner, Franz Alexander, Clarence P. Oberndorf, Ernst Simmel and Thomas M. French.

The Psychogenesis of a Fatal Organic Disease, by Dr. Bernhard Berliner (by invitation), San Francisco, Calif. Discussion by Drs. Karl A. Menninger, Ernst Simmel, Alfred Solomon, Nolan D. C. Lewis and Bernhard Berliner.

Hospital Care of Psychoanalytic Patients, by Dr. Norman Reider, The Menninger Clinic, Topeka, Kansas. Discussion by Drs. Ernst Simmel, Dexter M. Bullard and Norman Reider.

ON ADMINISTRATION. THURSDAY MORNING SESSION, JUNE 9, 1938.

President Elect Hutchings at first presiding, later Dr. Walter Treadway.

The Organization of the Traveling Child Guidance Clinic in the University of Oregon Medical School, by Dr. W. H. Hutchens (by invitation), Portland, Ore. Discussion by Drs. Frederick H. Allen, Charles L. Rimer and W. H. Hutchens.

Situation of the State Hospitals in California, by Harry Lutgen (by invitation), Director of Institutions, Sacramento, California. Discussion by Drs. Frederick W. Parsons, Joseph E. Barrett, Philip Smith, Samuel W. Hamilton, Frederick W. Parsons and Mr. Harry Lutgen.

Criminality Overlapped by Insanity, by Warden James A. Johnston (by invitation), United States Penitentiary, Alcatraz Island. Discussion by Dr. Winfred Overholser.

The Psychiatric Department in the General Hospitals of Omaha, by Dr. G. Alexander Young, Omaha, Nebr. Discussion by Drs. Samuel W. Hamilton and G. Alexander Young.

Organization of a Ward for Adolescents in Bellevue Psychiatric Hospital, by Dr. Frank J. Curran, New York, N. Y. Discussion by Drs. Herbert E. Chamberlain, Henry I. Klopp and Frank J. Curran.

JOINT SESSION WITH SECTION ON MENTAL DEFICIENCY, THURSDAY AFTERNOON, JUNE 9, 1938.

Dr. Ransom A. Greene presiding.

Encephalography in Relation to Mental Defect, by Dr. George Schade (by invitation), San Francisco, Calif. Discussion by Drs. Olga Bridgman, A. W. Hackfield and George Schade.

Birth Histories in Superior and Inferior Children, by Dr. Violet Bathgate (by invitation), San Francisco, Calif. Discussion by Drs. Olga Bridgman, A. W. Hackfield, Paul Popenoe and Violet Bathgate.

Growth Studies at the Institute of Public Welfare, University of California, by Dr. Harold E. Jones (by invitation), Berkeley, Calif. Discussion by Dr. William Malamud.

New Trends in Human Sterilization, by Dr. Paul Popenoe, Los Angeles, Calif. Discussion by Drs. Aaron J. Rosanoff, F. O. Butler and Paul Popenoe.

Birth Injuries as Found in State Institutions in Recent Years, by Dr. F. O. Butler (by invitation), Eldridge, Calif. Discussion by Dr. Ransom A. Greene.

ON THERAPY. FRIDAY MORNING SESSION, JUNE 10, 1938.

President Elect Hutchings presiding.

One Year's Experience with Group Psychotherapy, by Dr. Ira M. Altshuler. Discussion by Drs. Frank J. Curran and Ira M. Altshuler (closing).

Anogenic Psychoneuroses: Etiology and Therapy, by Dr. Frank M. Mikels.

Syphilis in Neuropsychiatry, by Drs. Baldwin L. Keyes and Kenneth M. Corrin. Discussion by Dr. M. A. Tarumianz.

Some Neuropsychiatric Problems in General Medical, Surgical and Domiciliary Facilities, by Drs. Howard C. Curtis and W. M. Bevis. Discussion by Drs. Frederick F. DuPree, Thomas M. Barrett, Howard C. Curtis and Herman S. Major.

SECTION III. STUDIES FROM THE LABORATORY. TUESDAY AFTERNOON SESSION, JUNE 7, 1938.

Dr. G. S. Johnson, San Francisco, Cal., presiding.

The Effects of Malaria on Definitely Syphilitic Serology, by Dr. U. S. Bowen. Discussion by Drs. Clarence A. Neymann and U. S. Bowen (closing).

The Electroencephalograms of Psychotic Patients, by Dr. and Mrs. Hallowell Davis. Discussion by Drs. Herbert H. Jasper, D. Ewen Cameron, Kenneth J. Tillotson, W. G. Lennox and Mrs. Pauline A. Davis (closing).

Long Period Potential Variations from the Intact Human Head, by Drs. Robert Cohn and Karl Langenstrass. Discussion by Drs. Hallowell Davis,

William G. Lennox, Herbert H. Jasper, M. R. Somers, Himwitch, Joseph Wortis, E. Friedman, L. L. Orenstein and Robert Cohn (closing).

Certain Aspects of the Behavior of Cats After Removal of the Neo-cortex, by Dr. David McK. Rioch. Discussion by Dr. Jules H. Masserman.

CLINICAL PATHOLOGICAL STUDIES. WEDNESDAY MORNING SESSION, JUNE 8, 1938.

Dr. C. B. Farrar, Canada, presiding.

Psychotic Manifestations in the Presence of Cerebral Vascular Lesions, by Dr. Cullen Ward Irish. Discussion by Drs. Wilder Penfield, A. L. Skoog, H. S. Gregory and Cullen Ward Irish (closing).

Lead Encephalopathy in Children and Adults: A Clinico-pathological Study, by Dr. Andrew J. E. Akelaitis. Discussion by Drs. William Malamud, Louis Casamajor, A. L. Skoog, Wilder Penfield and A. J. E. Akelaitis (closing).

Non-classifiable Organic Psychosis, by Drs. R. W. Waggoner and K. Lowenberg. Discussion by Drs. A. J. E. Akelaitis, Lauretta Bender, Wilder Penfield and K. Lowenberg (closing).

A Clinico-pathological Study of Fatal Cases of Acute Manic-depressive Psychosis, by Dr. Charles P. Larson. Discussion by Drs. Henry I. Klopp, H. S. Gregory, Lloyd H. Ziegler, J. F. Bateman and Charles P. Larson (closing).

Pick's Disease in Early Adult Life, by Drs. K. Lowenberg, David A. Boyd, Jr., and D. Salon. Discussion by Drs. Louis Casamajor and K. Lowenberg (closing).

CLINICAL STUDIES. WEDNESDAY AFTERNOON SESSION, JUNE 8, 1938.

Dr. Cheney presiding.

A Study of the Influence of Emotions and Affects on the Surface Temperature of the Human Body, by Drs. Lloyd H. Ziegler and Paul T. Cash. Discussion by Drs. Lawrence Selling, Arnold W. Hackfield and Lloyd H. Ziegler (closing).

Nocturnal Enuresis in Adults, by Dr. F. E. Weatherby. Discussion by Drs. Clifford G. Hines, Ralph Hamill, R. H. Hunt, Foster Kennedy, Max H. Weinberg and F. E. Weatherby (closing).

The Paucity of Arthritis Among Psychiatric Cases, by Dr. Donald Gregg. Discussion by Drs. Karl A. Menninger, Clarence O. Cheney, Fred P. Currier, Clarence O. Cheney and Donald Gregg (closing).

Experimental Aspects of Huntington's Chorea, by Dr. Ernest G. Lion and Dr. Eugen Kahn. Discussion by Drs. Foster Kennedy, Clarence O. Cheney and Ernest G. Lion (closing).

Hematoporphyria, by Dr. Charles F. Obermann. Discussion by Drs. Walter Beckh, Clarence O. Cheney and Charles F. Obermann.

MISCELLANEOUS SUBJECTS. THURSDAY MORNING SESSION, JUNE 9, 1938.

Dr. Ralph Hamill, Chicago, presiding.

The Psychiatric Patient's Family: Problems and Management in a Treatment Hospital, by Dr. Edwin E. McNeil. Discussion by Drs. Sydney Kinnear Smith and Theophile Raphael.

Attitudes of Relatives Toward the Mental Hospital, by Dr. John P. Powers. Discussion by Dr. Clifford W. Mack.

A Discussion of the Character of the Psychological Material Elicited in the Rorschach Test and its Diagnostic Possibilities, by Drs. Ernest Schachtel and Anna Hartoch. Discussion by Drs. Franklin G. Ebaugh, and Dexter M. Bullard.

Disturbances in Speech Integration and Disintegration as Related to Gestalt Theories, by Dr. Fred P. Currier. Discussion by Drs. Lauretta Bender, Edward D. Hoedemaker, Ralph C. Hamill and Fred P. Currier (closing).

Life Situation Tests as Aids to Psychiatric Prognosis, by Drs. Abraham A. Low and H. Douglas Singer. Discussion by Drs. Lloyd H. Ziegler, H. Douglas Singer and Abraham A. Low (closing).

Jean Etienne Dominique Esquirol—His Work and Importance for Modern Psychiatry, by Drs. M. K. Amdur and E. Messinger. Discussion by Dr. Oskar Diethelm.

STUDIES IN INTOXICATION. THURSDAY AFTERNOON SESSION, JUNE 9, 1938.

Dr. Lawrence Kolb, Kentucky, presiding.

Personality Reactions in a Group of Military Airplane Pilots—With Special Reference to Behavior to Alcohol, by Dr. P. G. Hamlin. Discussion by Drs. F. E. Weatherby and Dr. Lawrence Kolb.

The Problem of the Alcoholic in the Community: Extramural Study and Treatment, by Dr. Robert V. Seliger. Discussion by Drs. Ralph C. Hamill, Nathaniel H. Brush, William W. Young, F. E. Weatherby and Herbert Hardness.

Recurrent Lead Poisoning with Neurological Changes, by Dr. R. E. Toms. Discussion by Drs. Edward E. Mayer, A. J. Akelaitis and R. E. Toms (closing).

Bromide Intoxication Involving Brain and Skin, by Dr. A. L. Skoog. Discussion by Drs. S. Bernard Wortis, Lawrence Kolb and A. L. Skoog (closing).

ROUND TABLE DISCUSSIONS.

THURSDAY EVENING, JUNE 9, 1938.

ARTIFICIAL FEVER THERAPY.

Moderator: Dr. Clarence A. Neymann.

CHILD PSYCHIATRY.
Moderator: Dr. Frederick H. Allen.

FORENSIC PSYCHIATRY: THE INSANITY PLEA.
Moderator: Dr. Winfred Overholser.

GROUP PSYCHOTHERAPY.
Moderator: Dr. Paul Schilder.

OCCUPATIONAL THERAPY.
Moderator: Dr. Richard H. Hutchings.

PHARMACOLOGICAL SHOCK TREATMENT.
Moderator: Dr. Solomon Katzenelbogen.

PSYCHIATRIC NURSING.
Moderator: Dr. George H. Stevenson.

PSYCHIATRIC SOCIAL SERVICE.
Moderator: Dr. Forrest N. Anderson.

PSYCHOANALYSIS IN HOSPITALS AND CLINICS.
Moderator: Dr. Karl A. Menninger.

PSYCHOSOMATIC RELATIONSHIPS.
Moderator: Dr. Theodore P. Wolfe.

STANDARDS FOR MENTAL HOSPITALS.
Moderator: Dr. Clarence M. Hincks.

SUICIDE.
Moderator: Dr. Nolan D. C. Lewis.

TREATMENT IN SCHIZOPHRENIA.
Moderator: Dr. William Malamud.

VETERANS ADMINISTRATION.
Moderator: Dr. Appleton H. Pierce.

WILLIAM C. SANDY, M. D., *Secretary-Treasurer.*

REPORTS OF COMMITTEES.

The following reports of Committees and of the Secretary-Treasurer were presented to the Association and approved by it during the convention sessions in San Francisco, California, June 6-10, 1938.

Report of the Executive Committee.

After correspondence between the Chairman of the Committee on Arrangements, the Executive Committee, the Secretary, and the Executive Assistant, the Fairmont Hotel for the 94th annual meeting, and the Fairmont and Mark-Hopkins Hotels, San Francisco for accommodations for those persons in attendance were agreed upon, the time of meeting to be June 6 to 10, 1938.

A meeting of the Executive Committee was held on Tuesday, August 10, 1937, at 2 p. m., in the office of the Association at 2 East 103rd Street, New York City. Present were Doctors Ross McC. Chapman, Richard H. Hutchings, J. Allen Jackson, and Clarence O. Cheney who was in attendance at the invitation of Dr. Chapman, the President.

The Executive Committee approved the plans for a special train from Chicago to San Francisco for the 1938 Meeting of the Association, and return, as so far worked out by Mr. Austin M. Davies, Executive Assistant, with the railroads. There was thorough discussion on make-up of train and equipment and of what time may be given going out and back for sight-seeing. It was decided that the return trip will be made over the Great Northern by way of Glacier National Park instead of over the Canadian Pacific. The committee approved an expenditure, not to exceed $200, for the circularizing of Membership, which this year must necessarily be more extensive than usual. It is understood that in September letters will be sent to all Membership of the Association, covering the trip in detail with as nearly accurate an estimate of costs as can be prepared.

An allowance, not to exceed $125, was approved for Doctor Winfred Overholser, as Chairman of the Committee on Legal Aspects of Psychiatry, to attend the meeting of the American Bar Association in Kansas City on September 28. Dr. Overholser will address the Criminal Law Section and also has been invited to meet with the committee of the American Bar Association.

The Executive Committee approved of Mr. Davies making a trip to Pittsburgh, Chicago, Detroit, Cincinnati and Cleveland for the purpose of securing advertisements for the Journal and securing information on the hotels for future meetings.

The meeting adjourned at 3.45 p. m.

On October 21, 1937, at 2.10 p. m. the Executive Committee met at the office of the Association at 2 East 103rd Street, New York City, all members

being present. Drs. Nolan D. C. Lewis and Arthur P. Noyes were also in attendance at the invitation of Dr. Chapman, the President.

Dr. Chapman presented the tentative proposal of the John and Mary R. Markle Foundation to finance as a special project under the supervision of the American Psychiatric Association the gathering of scientific medical articles in foreign languages on the hypoglycemic insulin shock treatment of schizophrenia, translating the articles and putting them in form for distribution to the profession. After considerable discussion of minimum desirable requirements in respect to money and personnel, Drs. Chapman and Treadway were authorized as a special committee to consult with the Foundation as to further details, reporting back to the Executive Committee.

The meeting adjourned at 4.30 p. m.

On December 27, 1937, the Executive Committee met at 2.30 p. m. in the Lexington Hotel, New York, all members being present.

The question of adopting some retirement system for the protection of the employees of the New York office of the Association was presented by the Secretary. It was suggested that the executive assistant prepare a careful and complete statement as to desirable system for further consideration at the next meeting.

President Chapman reported that Mr. Archie Woods, Vice President and Treasurer of the John and Mary R. Markle Foundation has announced in a letter that an appropriation of $3000 has been made to The American Psychiatric Association to finance the translation of the proceedings at the International Conference at Switzerland on the treatment of schizophrenia by insulin.

President Chapman stated that Dr. Ebaugh, designated to represent the Association at the A. A. A. S. was unable to attend and that Dr. Max Bahr had been appointed in his place. Meeting adjourned at 3.30 p. m.

On December 27, 1937, at 3.40 p. m. at the Lexington Hotel, New York, the Council met, there being 24 members of the Association in attendance; President Chapman in the Chair.

The various committees were represented by the Chairmen, who submitted preliminary reports.

Dr. Cheney, of the Board of Examiners stated that there were at present 115 new applications for membership.

Dr. Hall of the Program Committee reported that 82 papers have been submitted with room on the program for approximately 55. Dr. Hall requested advice as to the policy of placing non-members on the program "by invitation." The Council decided that the expression "by invitation" should be used only in instances where the non-member reader has been actually invited to contribute a paper. The Council favored the general policy that the program of the annual meeting shall be made up of papers by members of the Association, unless a non-member is explicitly invited to contribute a paper.

Dr. Curry of the Nominating Committee reported progress.

In the absence of Dr. Myers, Chairman, the Secretary read a detailed report of the activities of the Committee on Arrangements submitted by the Chairman which was received by the Council with appreciation.

Dr. George S. Stevenson, a member of the Committee on Psychiatric Social Service, submitted a report in the absence of Dr. Hartwell, the Chairman. The committee has held no meetings but through correspondence has had under discussion (1) the tendency of certain schools for social work to consider adequate the training of psychiatric social workers without experience in mental hospitals and clinics (this is a question pertaining to the maintenance of standards); (2) a trend to carry the work of psychiatric social workers into non-psychiatric fields and the question whether or not the scope of such workers should be limited to a closer association with psychiatry.

Dr. Burlingame of Public Education summarized the activities and accomplishments of his committee during the year. Dr. Burlingame again recommended the development of a year around educational program for the public and the medical profession. In the general discussion which followed, it was suggested that the committee submit a detailed plan for such a program. President Chapman expressed appreciation of the stimulus Dr. Burlingame has given this work and the effectiveness of his activities as Chairman of the Committee on Public Education.

The Council adjourned 6.00 p. m. for dinner and at 8 p. m. resumed.

Dr. Noyes, Standards and Policies, reported that at a meeting of his committee today, the following subjects were considered (1) the desirability that candidates for the positions of superintendent, assistant superintendent and clinical director of mental hospitals should be certified by the American Board of Psychiatry and Neurology and that senior assistants should be preparing for such certification. On occasion, information as to the qualifications of candidates from a professional standpoint might be passed on to civil service authorities or Boards of Control. Furthermore, superintendents should be encouraged to attempt to train assistant physicians or make possible postgraduate study in preparation for the examination of the American Board; (2) a renewed emphasis on the state hospital as the psychiatric centre of its district with the establishment of community clinics under the direction of a full time adequately prepared member of the medical staff; (3) the desirability for psychopathic wards in general hospitals and for reciprocal relations between mental hospitals and general hospitals.

In the discussion, there was general approval including these subjects in the report. The Council voted that an appropriate symbol be used to designate in the List of Fellows and Members of the Association those who have been certified by the American Board of Psychiatry and Neurology.

Dr. Whitehorn, Research, stated the report of his committee would include as usual, reference to the activities of the National Research Council. Although Dr. Bruetsch will be unable to attend the San Francisco meeting, he will arrange for the scientific exhibit.

Dr. Dayton, Nomenclature and Statistics, in line with the last report of his committee, further recommended the adoption of one statistical manual for The American Psychiatric Association, replacing the three at present, *i. e.*, for the mentally ill, epileptics, and mental defectives. Reference was made also to the negotiations with the Director of the Bureau of the Census at Washington.

Dr. Overholser, Legal Aspects of Psychiatry reported progress.

Dr. Stevenson, Psychiatric Nursing, stated that his committee met with the nurses this morning and recommended that (1) the usual questionnaire be sent out; (2) certificates of schools no longer operating should be recalled; (3) schools not now accredited should be invited to apply for approval; (4) stimulation of further development of courses for affiliates and post-graduates; (5) consideration of more extensive facilities for training male nurses.

Dr. Farrar, Editor, spoke about the constantly increasing volume of work connected with the JOURNAL and the question of further editorial assistance. At present he did not feel justified in asking for more funds in view of the needs of the New York office. In the general discussion, members of the Council expressed a realization and appreciation of the heavy burden carried on by the Editor and there was an unanimous desire to arrange for some relief satisfactory to Dr. Farrar, who was requested to give the subject his further consideration for discussion at a subsequent meeting.

Mr. Davies, Executive Assistant, reported briefly as to the present financial status of the Association, the membership and the proposed transportation arrangements for the San Francisco meeting.

President Chapman reported (1) in regards to the negotiations with the John and Mary R. Markle Foundation and (2) in reference to the recommendations of the Executive Committee that the Association act as a disbursing agent for a fund to be donated for expenses of a symposium on mental health and related subjects to be sponsored by the Public Health Service and other scientific bodies and to be held in Richmond, Virginia, in December, 1938.

The Council voted approval of the action of the Executive Committee in its negotiation with the John and Mary R. Markle Foundation and the Secretary was instructed to communicate with Mr. Archie Woods, Vice President and Treasurer of the Foundation, expressing appreciation for the appropriation.

The Council further voted approval of the action of the Executive Committee for the collaboration of The American Psychiatric Association with the Medical Science Section of the American Association for the Advancement of Science, of which it is an affiliate body, in the presentation of a symposium on mental health, to be held at the December meeting of the American Association for the Advancement of Science in Richmond, Virginia, December 27-31, 1938, to assume responsibility as disbursing agent for the fund to be donated for the expenses of that symposium.

Invitations for the 1939 meeting were considered from a number of places, including Canada; Chicago, Illinois; Dallas, Texas; Detroit, Michigan; Cleveland and Cincinnati, Ohio. A ballot indicated that a majority of the Council favored Chicago, Illinois.

Upon motion by Dr. Hamilton, seconded by Dr. Treadway, the Council voted unanimously to hold the 1939 meeting in Chicago, Illinois, the time to be fixed by the Executive Committee after conferring with the local Committee on Arrangements.

The Secretary read a communication from Dr. Walter Freeman, Secretary of the American Board of Psychiatry and Neurology in regard to the desirability for better preparation of candidates in Anatomy and Pathology and suggesting making available a loan collection of slides with appropriate description and photographic material for postgraduate instruction purposes. The Council voted that Dr. Campbell be designated to confer with Dr. Freeman and to investigate ways and means of carrying out the suggestion. Dr. Campbell was authorized to make such negotiations as he deemed advisable in order to secure funds as may be required.

The Council received and voted to table communications from Dr. J. R. Neal, Chairman, Legislative Committee, Illinois State Medical Society and from Dr. Eugene S. Kilgore, San Francisco, both in regard to certain matters of legislation.

The Secretary read a communication from Dr. Robin C. Buerki of the Commission on Graduate Medical Education, requesting if possible an appropriation from the Association for three years. The Secretary was instructed to consult Dr. Franklin Ebaugh a member of the Commission as to this project and his advice as to desirable action.

The Council voted to accept the resignation of Dr. C. C. Drummond, Norfolk, Nebraska; also the resignations of the following, with dues remitted:

Dr. M. Houze, Brockville, Ontario.
Dr. John O. Newton, Cleveland, Ohio.
Dr. J. B. Rogers, Napa, California.

Upon motion of Dr. Treadway, seconded by Dr. Williams, Mr. Austin M. Davies was re-elected Executive Assistant, to continue in office during satisfactory service and at the pleasure of the Council.

Adjourned 12.25 a. m. December 28, 1937.

On January 4, 1938, a check for three thousand dollars ($3000) was received from The John and Mary R. Markle Foundation and deposited to the account of The American Psychiatric Association "to finance translation and distribution of the report of the International Conference held in Switzerland on the subject of the treatment of Schizophrenia through the use of Insulin."

Through correspondence conducted by the President and the Secretary, arrangements were made for The American Psychiatric Association to accept in installments from the Rockefeller Foundation the total maximum sum of nine thousand dollars ($9000) to be expended in connection with the preparation for the symposium on Mental Health to be held in Richmond, Virginia, December 27-31, 1938, in accordance with a predetermined budget.

The Executive Committee voted by letter to withdraw from the savings of the Association $2500 and as much more as may be necessary not to exceed a total of $3500 to meet the requisitions of the Survey Committee which have so far been paid from current income.

Respectfully submitted,

Ross McC. CHAPMAN, M. D., *Chairman,*
Executive Committee.

Report of the Secretary, 1937-38.

The following is a statement of the membership of The American Psychiatric Association as of May 15, 1938.

HONORARY MEMBERS.

Present number		19

LIFE MEMBERS.

Former number	59	
Fellows to Life Members	4	
Total		63
Died		4
Present number		59

CORRESPONDING MEMBERS.

Present number		4

FELLOWS.

Former number	887	
Members to Fellows	11	
Total		898
Fellows to Life Members	4	
Resigned	6	
Dropped	5	
Died	11	
Total		26
Present number		872

MEMBERS.

Former number	684	
Associate Members to Members	12	
Elected	159	
Reinstatements	1	
Total		856
Members to Fellows	11	
Resigned	5	
Dropped	8	
Died	4	
Total		28
Present number		828

ASSOCIATE MEMBERS.

Former number	79	
Elected	31	
Total		110
Associate Members to Members		12
Present number		98

TOTAL MEMBERSHIP.

Honorary	19	
Life Members	59	
Corresponding Members	4	
Fellows	872	
Members	828	
Associate Members	98	
Total membership May 15, 1938		1,880
Total membership April 15, 1937		1,732

WILLIAM C. SANDY, M. D., *Secretary.*

REPORT OF TREASURER.

STATEMENT OF CASH RECEIPTS AND CASH DISBURSEMENTS FOR PERIOD FROM APRIL 16, 1937 TO MAY 14, 1938.

(For Thirteen Months.)

Bank Balance, April 16, 1937			$29,279.77
Receipts.			
Membership Dues	$13,275.62		
Exhibits—1937 Convention	455.00		
Exhibits—1938 Convention	237.50		
Interests—Savings Accounts	545.85		
Total Income		$14,513.97	
John & Mary R. Markle Foundation	$3,000.00		
Less Payments Therefrom	516.53		
		2,483.47	
Symposium on Mental Hygiene	$4,416.68		
Less Payments Therefrom	4,058.81		
		357.87	
San Francisco Special Train Account		9,751.45	
Total Receipts			27,106.76
			$56,386.53

Disbursements.

Executive Assistant	$3,900.00	
Clerical Salaries	1,592.50	
Rent	975.00	
Mental Hospital Survey Committee	2,993.09	
Subsidy—AMERICAN JOURNAL OF PSYCHIATRY	2,877.30	
Committee Expenses	1,526.08	
Convention Expense—1937	146.32	
Convention Expense—1938	45.18	
Reporting—1937 Convention	985.00	
Programs—1937 Convention	544.92	
Directory of Members	799.68	
Printing	528.96	
Postage	530.81	
Bond—A. M. Davies	50.00	
Accounting	40.00	
General Expenses	447.50	
Total Disbursements		$17,982.34
Total Balance at May 14, 1938, Subject to Special Funds (See Schedule Attached)		$38,404.19

AMERICAN JOURNAL OF PSYCHIATRY.

Statement of Cash Receipts and Cash Disbursements for Period April 16, 1937 to May 14, 1938.

(For Thirteen Months.)

Bank Balance April 16, 1937		$1,364.41
Receipts.		
Income from Subscriptions	$6,549.50	
Reprints	1,334.93	
Back Numbers	183.93	
Advertising	2,166.46	
Total Receipts		10,234.82
		$11,599.23

Disbursements.

Printing (Volume 93 No. 4 through Volume 94 No. 3)	$9,526.97	
Editorial Assistance	1,098.73	
Postage	265.50	
Mailing Back Numbers	76.38	
Telephone and Telegraph	185.83	
Office Supplies	39.76	
Miscellaneous Expenses	35.30	
Total Disbursements		$11,228.47
Bank Balance May 14, 1938		$370.76

SCHEDULE OF CASH BALANCES, MAY 14, 1938.

	Book.	Balance.
Public National Bank		$13,267.12
Bank for Savings	1,324,532	3,563.54
Union Dime Savings Bank	1,115,778	6,490.91
Emigrant Industrial Savings	137,048	8,796.29
Bowery Savings Bank	258,266	6,286.33
Total		$38,404.19

TOTAL CASH RESOURCES.

American Psychiatric Association (as above)	$38,404.19
AMERICAN JOURNAL OF PSYCHIATRY	370.76
Total	$38,774.95

Subject To.

San Francisco Special Train Account	$9,751.45	
John and Mary R. Markle Foundation	2,483.47	
Symposium on Mental Hygiene	357.87	
Total Funds Owing		12,592.79
Net Resources Available		$26,182.16

WILLIAM C. SANDY, M. D., *Treasurer.*

May 18, 1938.

Mr. Austin M. Davies, Executive Assistant, American Psychiatric Association, 2 East 103rd Street, New York, N. Y.

DEAR SIR:

As per your request, I have made an audit of the books and records of The American Psychiatric Association and of the AMERICAN JOURNAL OF PSYCHIATRY for the period from April 16, 1937 to May 14, 1938.

Attached herewith you will find a report containing the following:

*1. Statement of Cash Receipts and Cash Disbursements of The American Psychiatric Association for the period from April 16, 1937 to May 14, 1938.

*2. Statement of Cash Receipts and Cash Disbursements of the AMERICAN JOURNAL OF PSYCHIATRY for the period from April 16, 1937 to May 14, 1938.

*3. Schedule of Cash Balances.

Please note that the above exhibits reflect only the cash transactions for the period under review. No consideration has been taken for accrued expenses at May 14, 1938.

In connection with the audit I added the Cash Receipts and Cash Disbursements books, reconciled the bank statements, examined all vouchers, and analyzed all items of receipts and of disbursements.

Should you desire any further information upon any item in this report, please do not hesitate to call upon me.

Respectfully submitted,
A. A. TUROFF,
Certified Public Accountant.

REPORT OF THE EXECUTIVE ASSISTANT.

Your Executive Assistant herewith submits his annual report:

The financial report for the office continues to show an increase. This can be largely attributed to our successful appeals, which resulted in securing 119 new subscriptions to the JOURNAL since May 1937. The present total of 611 is the largest number of subscribers in the history of the JOURNAL.

The Membership account shows to date a disbursement of $4,642.49 to the Mental Hospital Survey Committee, leaving a balance of $357.51 remaining to complete the appropriation of $5,000.00. These payments from the active account were made possible by reducing subsidies to the JOURNAL.

In April of this year, the JOURNAL was falling behind in paying its printing bills due, not only to reduced subsidies, but also, to the fact that one more issue was published in the current year than last. Your Executive Assistant explained the condition to the Executive Committee, who approved the withdrawal of $2,500.00 from reserve funds. It is hoped that a substantial part of this sum may be saved from next year's budget and returned to surplus.

In spite of adverse conditions, I am glad to report that our advertising revenues have increased slightly over last year. This office successfully assisted the Committee on Arrangements in selling exhibit space for the San Francisco meeting.

Your Executive Assistant has again cooperated in assisting the Secretary, the Board of Examiners, the Committee on Program and the Committee on Arrangements.

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*NOTE.—These statements were used as the basis for the report of the Treasurer and appear in the foregoing report as submitted by the Certified Public Accountant.

REPORT.

April 16, 1937–May 1, 1938.

INCOME:

New Business and Renewals

New Subscriptions ($318.00 still due)	$705.00	
Renewal of Subscriptions ($846.00 still due)	2,952.00	
New Advertising ($311.25 still due)	516.50	
Renewal of Advertising ($490.37 still due)	1,760.35	
Commercial Exhibits—May 1937	455.00	
May 1938	237.50	
Sale of Back Numbers	183.93	
Total		$6,810.28

DISBURSEMENTS:

Office Expense

Rent of Office	$900.00	
Telephone and Telegraph	185.83	
Office Supplies	39.76	
Postage	265.50	
Miscellaneous Expense	111.68	
Printing (letterheads, envelopes, etc.)	67.84	
Dorothy Rubenstein—Salary	1,350.00	
Austin M. Davies—Salary	3,600.00	
Total		$6,520.61

Very truly yours,
AUSTIN M. DAVIES.

REPORT OF COMMITTEE ON PUBLIC EDUCATION.

The committee has tried to continue to base its educational material on the scientific research being done by members of the Association and to emphasize whenever possible, the standards of the Association and its requirements for membership.

In the main, members of the Association have cooperated with the Committee in attempting to restrict the issuance of unauthorized material. Each year we have had more and more cooperation in this respect. During the present meeting, there has only been one instance where unauthorized information was given to the press which misrepresented members of the Association in "personal squabbles."

A preliminary report addressed to the Council at the mid-year meeting represented the views of the Committee, which it is hoped may be followed by specific recommendations during the coming year. A copy of this preliminary report is attached and forms part of the communication to the Council.

Our relationship with the public has been materially strengthened during the past five years. We feel we are in a better position now, than ever before to know what the public thinks of us and what the public expects from us. In this connection, we might suggest that it is an annual inquiry from the public through the press as to what happens to the recommendations contained in the various Presidential addresses. Your Committee respectfully suggests that in the interest of the public, the Council might well establish the practice of reviewing and disposing of the recommendations contained in the Presidential address. Should the Council take action along these lines at any time throughout the year, your Committee will use its best efforts to answer these inquiries as to "what are we going to do" about these problems.

Respectfully submitted,
C. C. BURLINGAME, M. D., *Chairman*,
THOMAS A. RATLIFF, M. D.,
WILLIAM W. YOUNG, M. D.,
KARL M. BOWMAN, M. D.,
WILLIAM C. MENNINGER, M. D.

PRELIMINARY REPORT COMMITTEE ON PUBLIC EDUCATION.

Your Committee on Public Education is pleased to be able to report that members of the Association are cooperating more fully than ever before in an orderly handling of material for the Press.

At the last meeting of the Association more than 80 per cent of the papers read at the meeting were filed with the Committee prior to the meeting. Also, there was with scarcely an exception no difficulty experienced through unauthorized statements or interviews, which in the past have caused considerable difficulty.

Well understood working arrangements have been established with the Associated Press, Science Service, and other National News Agencies, as well as with the larger Metropolitan Newspapers, the Science Editors of which are now in personal attendance at the annual meeting.

It has been the aim of the Committee to reduce as far as possible the publication of sensational or frothy material and to emphasize the scientific research being done by members of the Association, as well as the high standards of the Association itself. In other words, the quantity of the material published has been subordinated to the quality of the material, although reports from Clipping Bureaus indicate that reports of the meeting were published in every state and in many national magazines.

The Committee has received excellent cooperation from the Executive Assistant, Mr. Davies, and arrangements have been made by him for the physical equipment and space necessary for press headquarters at each meeting.

Because of the geographical location of the next meeting it is recommended that readers of papers be requested to submit two copies of their paper to the Committee, one to be sent directly to California headquarters of the Committee, and the other to be available in the East for eastern newspapers.

It is also recommended that the same facilities be arranged for the Committee at the meeting, as in previous years.

Your Committee reiterates the substance of its report of last year: that consideration should be given to the establishment of a year round educational program. As the only authoritative organization to speak for the medical specialty of psychiatry, the time must surely come when the Association cannot be satisfied with sporadic educational work. There has never been a time when developments in the field of psychiatry were more in need of interpretation and there is no reason to believe that this need will grow less in the future.

C. C. BURLINGAME, M. D., *Chairman.*

REPORT OF COMMITTEE ON RESEARCH.

It has become the custom in recent years for your committee on research to report upon current trends in psychiatric investigation, and occasionally to comment upon them. In considerable measure, the programs of the annual meetings constitute a report on the progress of psychiatric investigation, not complete but representative of our diversified interests. Within the last decade the character of these meetings has changed somewhat toward that of a congress of workers, united by a common interest in psychiatric problems, but diversified in the manner of approach and technology. The audience-attitude and the manner of discussion has correspondingly changed somewhat, more toward one of encouragement and appreciation, rather than toward one of penetrating criticism and debate. Fortunately the round table meetings foster less formal discussions with readier give-and-take. Even more informal conferences and conversations supplement the presentation of papers and formal discussions. The scientific exhibit has fostered fruitful informal contacts. It has been suggested that your committee on research might increase the value of this aspect of the annual meeting through scheduled conferences with research leaders. The advisability of such an attempt would depend upon the requests and suggestions which may be received by this committee.

One of the foremost topics of present psychiatric interest concerns the pharmacological methods recently introduced in the treatment of dementia præcox. The methods of Sakel and of von Meduna have seemed to promise possibilities of relatively quick treatment and discharge of patients in this class, who so commonly accumulate in the mental hospitals and contribute so heavily to the overcrowding there. The practical urge to get patients into condition for discharge has somewhat overshadowed the research interest in the nature and permanence of the patient's subsequent adjustment and its comparison with adjustments otherwise obtainable. It is also desirable, from the research point of view, to have some rather intensive comparative studies of patients who, after undergoing these extraordinary experiences, remain in the hospitals.

Interest in psychiatric research has been growing for a number of years, and this interest has been generating financial support. The Commonwealth fellowships have done much for the recruitment and training of able workers.

The Rockefeller Foundation has given over six million dollars for fostering work in our field, and—quoting from Fosdick's review—"to aid in infusing medicine with psychiatry and neurology." The National Research Council has been supporting several activities of direct psychiatric importance, through its committees on drug addiction and on problems of sex, and more recently through conferences on the experimental neuroses and allied problems. Fellows of this Association have participated constructively in these activities. These evidences of encouraging support should not lead us to suppose, however, that others can do our research for us.

Respectfully submitted,

JOHN C. WHITEHORN, M. D., *Chairman,*
CLIFFORD B. FARR, M. D.,
E. L. HORGER, M. D.,
WALTER L. BRUETSCH, M. D.,
HARRY STACK SULLIVAN, M. D.

REPORT OF THE COMMITTEE ON NOMENCLATURE AND STATISTICS.

To the Council of The American Psychiatric Association:

The committee wishes to bring to the attention of the Association the following points:

I. Recommendations for changes in the country-wide statistics prepared by the Bureau of the Census, Department of Commerce.

II. Recommendations for the re-writing of the Statistical Manual of the American Association. It is recommended (1) that suggestions for changes in the present Psychiatric Classification, as included in the Standard Classified Nomenclature of Diseases, be made during 1938, (2) that these changes be discussed and acted upon during the 1939 annual meeting, and (3) that a final draft of the Classification, including changes, be prepared for the proposed 1940 revision of the Nomenclature.

III. Recommendations for the establishment of a single comprehensive Psychiatric Classification to include the three clinical groupings now considered separately: (1) mental disorders, (2) mental deficiency, and (3) convulsive disorders.

IV. Recommendations that the present method of including in State and national statistics only those patients admitted under court commitment, be discontinued; that data on all patients with mental disturbances admitted to psychopathic or other mental hospitals be added to the present statistics.

I. With the approval of the Council, the Chairman of the committee conferred with officials of the Bureau of the Census in December, 1937, in reference to certain changes in the country-wide statistics on mental disorders, mental deficiency and epilepsy. Following this conference, the members of the Council and others cooperated with members of this committee in communicating with Mr. William L. Austin, Director of the Bureau of the

Census. Following an expression of appreciation on the part of the Association for the past work of the Bureau of the Census, the following suggestions for changes were made:

(a) It is requested that the present separate reports devoted to mental disorders, mental deficiency and epilepsy be enlarged to include additional data approaching the scope of the work covered in the ten-year reports. The Annual Reports, while exceedingly valuable, have been necessarily limited. It is the hope of the Association also that an enlargement of the budget devoted to this work may make possible an earlier printing of the reports of these three divisions of psychiatry. At the present time we find that the 1935 Reports on these subjects are the latest available. While different States vary in the time of the reporting of their financial and clinical statistics, they usually publish these data within six or eight months after the close of the fiscal year. In connection with the presenting of budgetary requirements to legislatures, officials are frequently asked questions in reference to the procedures and expenditures of other States. It would be of material benefit from both the clinical and financial aspects if the report of the Census Bureau on these points could be available at an earlier date than at present.

(b) It is advisable that consideration be given to the matter of color in future reports. It has been found that the distribution of the psychoses in the white and negro population of mental hospitals, presents marked differences. The thought has been expressed in several quarters that the observed variations in the distribution of the psychoses in different regions of the United States may be due to the inclusion of both white and colored under one heading rather than climatic or other factors.

(c) It is advisable that the present division of admissions into first admissions and readmissions may be extended to the discharges and the deaths. It has been brought out that first and readmissions leaving hospitals show radical differences in discharge rates and in length of time spent within hospitals previous to discharge. In addition, first and readmissions who have died show marked differences both in death rates and in length of hospital stay. As discharge rates, death rates and length of hospital stay serve as an index of the working efficiency of our hospitals and schools, it is advised that these discriminating sub-divisions be introduced at an early date.

As a result of the cooperative action outlined above on the part of members of the Council, members of the Committee and others, satisfactory progress can be reported. At the time of the preparation of this report it is stated that the Bureau of the Census has transferred the national statistics on mental diseases, mental deficiency and epilepsy from a census basis in the Division on Population to a reporting basis in the Division of Vital Statistics. Thus, mental disorders, mental deficiency and epilepsy now take their deserved place among the nation's recognized public health problems.

II. The committee wishes to suggest that consideration be given to the matter of re-writing the Statistical Manual for the Use of Mental Hospitals. A revision of the Standard Classified Nomenclature of Diseases is being planned for the year 1940 (J. A. M. A., 110: 509, Feb. 12, 1938), and it is

highly desirable that this Association discuss this matter early, and have any proposed changes in the psychiatric classification well in hand by the end of 1938. This would allow for discussion at the time of the 1939 annual meeting, and the preparation of the final revision before 1940. Several proposed changes are already in hand. If the members will send other suggestions for changes to the committee immediately, ample time will be available for consideration of any proposed changes and the preparation of a tentative report for presentation to the Council at the 1939 meeting.

III. The committee wishes to repeat its recommendations of last year in reference to the establishment of one comprehensive psychiatric classification to include the fields of mental disorders, mental deficiency and the convulsive disorders. This enlarged classification, complete with definitions, should be published in one manual which could then be used in all types of institutions. This would insure the use of one system of diagnosis for all three types of institutions. For example, the clinical groupings and definitions on the subject of convulsive disorders and mental deficiency would be easily available to the medical staffs of mental hospitals. At the same time the availability of the well-defined psychiatric classification would aid the medical staffs of both the epileptic hospitals and the state schools for mental defectives in arriving at a better understanding of the psychoses.

IV. The committee wishes to bring attention to the fact that discrepancies are developing in the statistics of various states through the exclusion of certain short-residence patients admitted under other forms of admission than the regular court commitment. With the growing confidence of the public in our mental hospitals, increasing numbers of patients are being admitted on the temporary forms, and many of these have a definite psychosis. Yet, in many states only those cases admitted under court commitment are being included in the regular statistics. As a result, the picture of mental disorders as a state-wide problem is being obscured, many thousands of patients cared for in psychopathic hospitals are not being reported, and our statistics are becoming increasingly misleading as time goes on. It is suggested that a greater public support might be gained and a better appreciation of the problems of our mental hospitals arrived at if the actual picture of *all* patients coming into *all types* of mental hospitals were presented in our State and national statistics. It is clear that present statistics, limited as they are to court commitments, are an understatement of the total number of cases of mental disorders coming into mental hospitals.

Respectfully submitted,

NEIL A. DAYTON, M. D., *Chairman,*
FRED P. MOERSCH, M. D.,
ALVIN T. MATHERS, M. D.,
JOHN M. DORSEY, M. D.,
GEORGE H. PRESTON, M. D.,
LAWRENCE KOLB, M. D.,
JAMES V. MAY, M. D.,
E. STANLEY ABBOTT, M. D.,
GERALD R. JAMEISON, M. D.,
FRANK H. LUTON, M. D.

Report of the Committee on Psychiatric Nursing.

To the Council of The American Psychiatric Association:

The number of accredited undergraduate schools of nursing accepting students during 1937 has been increased by two, from 46 to 48, by the accrediting of the Rockland State Hospital, Orangeburg, N. Y., the resumption of classes in a temporarily discontinued school, and by the re-accrediting of a school formerly accredited but temporarily dropped from the list, and the discontinuance of one school.

These 48 hospitals admitted 167 men students and 694 women students, a total of 861 (an increase of 77). There were graduated 63 men and 374 women, a total of 437 (a decrease of 12).

An analysis of the questionnaires completed by all accredited schools indicates that excellent standards are being observed and that the graduates obtain state registration without difficulty. All are accredited by their own state boards of nursing education. Adequate affiliations, usually 12 months, assure thorough training.

Steady improvement is noted in the facilities and working conditions within the schools. Only 11 schools require more than 56 hours of duty per week (including lectures) and 23 schools are on a 48 hour per week basis. Thirty-six schools have separate nurses' residences and most report good recreational facilities. Practically all report adequate physical examinations and protective inoculations for their students. Thirty-three schools report the use of special psychological tests for selection of students, indicating the care with which students are selected. About half the schools report difficulty in securing properly qualified applicants.

The hospitals in which the accredited schools of nursing are located show improved standards in ward personnel. The ratio of registered nurses to patients averages 1 to 35.6 on the women's divisions and 1 to 102.0 on the men's divisions. Ratio of total staff to patients is 1 to 6.85 on the women's services and 1 to 7.5 on the men's services, or for the total services a ratio of 1 to 7.1.

Our committee again sent supplementary questionnaires to the boards of nurse examiners in each state and province to ascertain what changes had been made in post-graduate and affiliate courses in psychiatric nursing. The results are shown in tabulated form but the trend has been to a decrease in the number of the former and an increase in the latter, with a decided increase in the number of general hospital schools of nursing which provide actual psychiatric nursing experience for their students, the number having increased from 288 in 1936 to 333 in 1937. (There are approximately 1500 registered schools of nursing in the United States and Canada). New York State appears to provide the most noteworthy advance, as indicated by the report that of 106 registered schools of nursing, 79 provide psychiatric experience for all their students and an additional 11 schools provide it for a part of their students. At the annual meeting of the schools of nursing in New York State, held in October, 1937, the hope was expressed that by 1940 psychiatric experience would be a requirement for all students of all schools of nursing.

Reports received from many other states indicate that the nursing profession is becoming keenly appreciative of the need of such experience as a part of the basic training.

The table on pages 471-476 lists (1) the undergraduate schools accredited by The American Psychiatric Association (2) post-graduate psychiatric nursing courses (3) affiliate psychiatric nursing courses, and (4) the number of general hospitals or other schools of nursing which give their students psychiatric nursing experience through an affiliate course in a mental hospital or a psychiatric division of their own hospital.

At the 1937 meeting in Pittsburgh a Round Table on Psychiatric Nursing was held, honored guests being Miss Harriet Bailey, R. N., and Miss May Kennedy, R. N., the latter of whom also contributed a paper to a general sectional meeting, entitled, "Nursing Education" which was subsequently published concurrently in the September 1937 number of the American Journal of Psychiatry and the American Journal of Nursing.

With the approval of Council, certificates of accrediting formerly issued to schools no longer operating were recalled.

The committee recommends that The American Psychiatric Association through this committee issue certificates of approval for post-graduate and affiliate courses where such comply with standards to be set by this committee with approval of Council. The committee recommends that superintendents of mental hospitals, operating undergraduate schools which are accredited in their own state by their board of nurse examiners, be invited to apply for accrediting by the Association, if not already accredited. It is highly desirable and should be of mutual advantage, that all such schools should be accredited by our Association.

The committee also urges that mental hospitals prepare themselves to offer affiliate courses and/or post-graduate courses for students of general hospital and other nursing schools. Such courses can readily be given in hospitals already operating accredited undergraduate schools, or may be given quite independently of such undergraduate training. The committee will be pleased to supply information to all interested inquirers.

All of which is respectfully submitted.

GEORGE H. STEVENSON, M. D., *Chairman,*
GARLAND H. PACE, M. D.,
CHARLES P. FITZPATRICK, M. D.,
HENRY I. KLOPP, M. D.,
EMMETT F. HOCTOR, M. D.,
KENNETH J. TILLOTSON, M. D.,
BENJAMIN W. BLACK, M. D.,
GEORGE F. INCH, M. D.,
J. FREMONT BATEMAN, M. D.,
PAUL G. TADDIKEN, M. D.

UNITED STATES.

State.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
Ala.	1. Bryce Hospital, Tuscaloosa.	0	0	0
Ariz.	0	0	0	0
Ark.	0	0	0	0
Cal.	0	0	1. Compton Sanitarium. 2. San Francisco City & Co. Hospital. 3. Los Angeles General. 4. Stanford Univ. Hospital, San Francisco.	6
Colo.	0	1. Colorado Psychopathic, Denver.	1. Colorado Psychopathic, Denver.	6
Conn.	0	1. Hartford Retreat.	0	7
Del.	0	0	1. Delaware State Hosp., Farnburst.	6
D. C.	0	1. St. Elizabeth's Hosp., Washington.	1. St. Elizabeth's Hosp., Washington. 2. Gallinger Municipal Hosp., Washington.	6
Fla.	0	0	0	3
Ga.	1. Milledgeville State Hosp., Milledgeville.	1. Milledgeville State Hosp.	0	0
Idaho	0	0	0	0
Ill.	0	1. Cook County, Chicago.	1. Cook County, Chicago. 2. Chicago State. 3. Peoria State.	12
Ind.	0	0	1. City Hospital, Indianapolis.	1
Iowa	0	0	0	1
Kansas	0	1. Menninger Sanitarium, Ellsworth.	0	1

UNITED STATES.—Continued.

State.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
Ky.	0	0	1. Louisville City Hosp.	2
La.	0	0	0	1
Maine	0	0	0	1
Md.	0	1. Mt. Hope Retreat, Baltimore. 2. Sheppard & Enoch Pratt, Towson.	1. Johns Hopkins Hosp., Baltimore. 2. Mt. Hope Retreat, Baltimore. 3. Sheppard & Enoch Pratt, Towson.	17
Mass.	1. Danvers State Hosp., Hathorne. 2. Medfield State Hosp., Harding. 3. McLean Hospital, Waverley. 4. Taunton State Hosp., Taunton. 5. Westborough State Hosp., Westborough.	1. Worcester State. 2. Taunton State.	1. Worcester State. 2. Psychopathic, Boston. 3. Danvers State. 4. McLean, Waverly. 5. Taunton State.	32
Mich.	1. Kalamazoo State Hosp., Kalamazoo. 2. Traverse City State Hosp., Traverse City.	0	0	6
Minn.	1. Fergus Falls State Hosp., Fergus Falls. 2. Rochester State Hosp., Rochester. 3. St. Peter State Hosp., St. Peter.	0	1. State Hospital, St. Peter.	14
Miss.	0	0	0	0
Mo.	0	1. St. Louis City Sanitarium.	0	2
Mon.	0	0	0	0
Neb.	0	0	1. Creighton Memorial, St. Joseph's, Omaha.	7

State.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
Neb.	0	0	1. Creighton Memorial, St. Joseph's, Omaha.	7

UNITED STATES.—CONTINUED.

State.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
Nev.	0	0	0	0
N. H.	1. New Hampshire State Hosp., Concord.	1. New Hampshire State Hosp., Concord.	1. N. H. State Hospital, Concord.	6
N. J.	1. Essex County Hospital, Cedar Grove. 2. N. J. State Hospital, Greystone Park.	1. N. J. State Hospital, Greystone Park.	1. N. J. State Hospital, Greystone Park. 2. Essex Co. Hospital, Cedar Grove.	23
N. M.	0	0	0	0
N. Y.	1. Binghamton State Hosp., Binghamton. 2. Brooklyn State Hosp., Brooklyn. 3. Buffalo State Hosp., Buffalo. 4. Central Islip State Hosp., Central Islip. 5. Craig Colony Hosp., Sanyea. 6. Gowanda State Homeopathic Hosp., Helmuth. 7. Hudson River State Hosp., Poughkeepsie. 8. King's Park State Hosp., King's Park. 9. Manhattan State Hosp., Ward's Island. 10. Middletown State Hosp., Middletown. 11. Rochester State Hosp., Rochester. 12. Rockland State Hosp., Orangeburg. 13. St. Lawrence State Hosp., Ogdensburg. 14. Utica State Hosp., Utica. 15. Willard State Hosp., Willard.	1. N. Y. Hospital (Westchester Division), White Plains. 2. Psychiatric Inst., N. Y.	1. State Hospital, Binghamton. 2. Brooklyn State Hosp. 3. Buffalo State Hospital. 4. Central Islip State Hosp. 5. Gowanda State Hospital. 6. Harlem Valley State Hosp., Wingdale. 7. Hudson River State Hosp., Poughkeepsie. 8. King's Park State Hosp. 9. Middletown State Hosp. 10. Rochester State Hosp. 11. Rockland State Hosp. 12. St. Lawrence State Hosp., Ogdensburg. 13. Utica State Hosp. 14. New York Hosp. (Westchester Division), White Plains. 15. Bellevue Hosp., N. Y. 16. Grasslands Hospital, Valhalla. 17. Neurological Institute, New York. 18. Marcy State Hospital.	75
N. C.	1. Highland Hospital, Asheville. 2. Dix Hill State Hosp., Raleigh.	1. Highland Hospital.	1. State Hospital, Raleigh.	1

UNITED STATES.—CONTINUED.

State.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
N. D.	0	0	0	0
Ohio	1. Cleveland State Hosp., Cleveland. 2. Toledo State Hosp., Toledo.	1. Toledo State Hospital.	1. Toledo State Hospital. 2. Cleveland City Hosp. 3. University of Cincinnati School of Nursing.	23
Okla.	0	0	0	0
Or.	0	0	0	1
Pa.	1. Danville State Hosp., Danville. 2. Pa. Hospital, Philadelphia.	1. Pa. Hospital. 2. Friends Hosp.	1. State Homeopathic, Allentown. 2. St. Francis Hospital, Pittsburgh. 3. Pennsylvania Hosp., Philadelphia. 4. Friends Hospital, Philadelphia. 5. Lancaster Co. Home. 6. Warren State Hosp. 7. Philadelphia General.	25
R. I.	1. State Hospital, Howard. 2. Butler Hospital, Providence.	0	1. Butler Hospital, Providence.	2
S. C.	1. S. C. State Hosp., Columbia.	0	1. State Hospital, Columbia.	3
S. D.	0	0	0	0
Tenn.	0	0	0	2
Tex.	1. San Antonio State Hosp., San Antonio.	0	1. Psychopathic Hosp., Galveston.	1
Utah	0	0	0	0
Vt.	0	0	1. Waterbury State Hosp., Waterbury.	1
Va.	0	0	0	5

		Waterbury.		
Va.	0	0	0	5

UNITED STATES.—CONTINUED.

State.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
Wash.	0	1. Northern State Hosp., Sedro Wooley. 2. Western State Hosp., Ft. Steilacoom.	1. Northern State Hospital, Sedro Wooley.	4
W. Va.	0	0	0	1
Wis.	0	1. Milwaukee Co. Gen. Hosp., Wanwatosa.	1. Milwaukee Co. Gen. Hosp., Wanwatosa.	11
Wy.	0	0	0	2

CANADA.

Prov.	Undergraduate schools accredited by A. P. A.	Post-graduate courses, psychiatric nursing.	Affiliate courses, psychiatric nursing.	General hospital schools receiving psychiatric nursing experience.
Alta.	0	1. Prov. Mental Hospital, Ponoka.	0	0
B. C.	0	1. Prov. Mental Hospital, Essondale.	0	0
Man.	0	1. Brandon Mental Hosp., Brandon.	1. Psychopathic Hosp., Winnipeg. 2. Brandon Mental Hosp., Brandon.	2
N. S.	1. Nova Scotia Hosp., Dartmouth.	0	0	0
N. B.	0	0	0	0
Ont.	1. Ont. Hospital, Brockville. 2. Ont. Hospital, Hamilton. 3. Ontario Hospital, Kingston. 4. Ont. Hospital, London. 5. Ont. Hospital, New Toronto. 6. Ont. Hospital, Whitby.	1. Psychiatric Hospital, Toronto.	1. Psychiatric Hospital, Toronto. 2. Ontario Hospital, London.	13
P. E. I.	0	0	0	0
Que.	1. St. Jean de Dieu Hospital for Insane, Gamelin, Laval Co., Quebec.	0	0	0
Sask.	0	0	0	1

SUMMARY.

United States	40	22	61	317
Canada	8	4	4	16
Total	48	26	65	333

Report of Committee on Psychiatric Standards and Policies.

The American Psychiatric Association has always been interested in raising the professional qualifications of physicians practicing psychiatry in United States and Canada. As one means of accomplishing this purpose it established certain requirements for membership in the Association and in 1933 created a Board of Examiners the duties of which shall be to pass upon the fitness of applicants for membership. In 1935, largely through the initiative of officers of this Association, there was created the American Board of Psychiatry and Neurology composed of twelve members, four each being designated by the Association, the American Neurological Association and the Section on Nervous and Mental Diseases of the American Medical Association. The functions of this Board are to determine the competence of specialists in psychiatry and neurology and to issue certificates of special knowledge in one or both of these fields to those who successfully pass the examinations given by the Board in these subjects. Similar boards for other branches of medical science have been created by the respective specialties. The time is rapidly approaching when the possession of a certificate from the appropriate examining board will be required for the public recognition of a physician as a fully qualified specialist in the branch of medicine which he practices. On January 1, 1938, 421 physicians had been certified by the American Board of Psychiatry and Neurology as qualified specialists in psychiatry (229 in both psychiatry and neurology and 192 in psychiatry alone). Since its organization a constantly increasing number of physicians has been seeking certification by this Board. In view of this fact the Committee on Psychiatric Standards and Policies believes that the Association might well make this desire for certification a means of encouraging the study of mental disorders, their nature, treatment and prevention and of promoting the standards of psychiatric hospitals. To this end the committee recommends that in the list of Fellows and Members of the Association published annually the names of those persons who have been certified by the American Board of Psychiatry and Neurology be marked by an asterisk or other sign indicating to that effect. This recognition will, we believe, stimulate many younger members of the Association to further study in order that they may meet the requirements of the Board.

In every state mental hospital are hundreds of persons suffering from disabling disorders for the general study and treatment of which physicians occupying the positions of superintendent, assistant superintendent and clinical director are responsible. Any study of these illnesses will scarcely be searching or enlightening or their treatment in accordance with sound practice unless these officers possess such technical knowledge as would, in the opinion of recognized psychiatric experts, qualify them to direct others in the diagnosis and treatment of nervous and mental diseases. The committee believes, therefore, that it would tend to promote desirable standards of care and treatment of patients in public mental hospitals were superintendents, assistant superintendents and clinical directors of such institutions qualified for certification by the American Board of Psychiatry and Neurology. The committee accordingly suggests it be recorded as the recommendation of the

Association that in selecting such medical officers appointing officials and agencies should take the matter of certification by that Board into consideration. Inasmuch as the positions of assistant superintendent and clinical director should be filled by the promotion of physicians who have been acquiring training and experience in the grade of senior assistant it logically follows that physicians of the latter grade should be preparing for examination by the Board.

If a desirable standard of qualifications for the higher grades in the medical staff be certification by the American Board of Psychiatry and Neurology it follows that it is a duty of the hospital to provide training whereby these members of the staff who wish to follow psychiatry, particularly institutional psychiatry, for their professional career may meet the requirements of the Board. This may entail some special effort on the part of the hospital, an effort, however, which is well worth while since the teaching hospital both attracts a superior grade of physicians and provides a higher standard of care for its patients. Any hospital meeting the minimum standards established by The American Psychiatric Association will have a reasonably stocked medical library. In addition to its clinical staff meetings it will conduct special ones for the discussion of psychiatric topics and will have a pathological laboratory where instruction in neuroanatomy and neuropathology may be given. At least one state having several state-owned hospitals for mental diseases arranges that physicians desiring to take the Board's examination may attend a series of lectures and demonstrations in these subjects given by the pathologist of one of its conveniently located institutions. Certain other states grant leaves of absence with pay when physicians pursue graduate courses.

It was natural that the practice of psychiatry should have its origin in, and for many years be largely confined to, the hospital for mental diseases. In recent years with the increasing emphasis on emotional and other psychodynamic factors in the production of mental illnesses and other personality disturbances extra-mural psychiatry in its various forms has, in more populous communities, come to occupy perhaps a larger place than has institutional psychiatry, limited as it almost entirely is to primary or severer forms of mental illness. One of the contributions of the newer psychiatry has been to call the physician's attention to the emotional, social, situational and kindred factors that may cause complications in somatic illness. With the growing recognition of the extent of psychiatric problems occurring in the average general hospital and dispensary patient population such hospitals are increasingly desiring and in many instances utilizing, the services of a psychiatrist in dealing with the emotional and other personality problems that complicate or create the disabilities for which many of their patients have sought relief. In one general hospital 1 out of every 13 admissions presented personality disorders which explained their disabilities. The same hospital reports that one out of every 7 new cases in its outpatient department were predominantly psychiatric problems and as many more required psychiatric understanding and guidance. Doubtless the percentage is as great in other general hospitals. While the Association has at times in its scientific programs included papers on this branch of psychiatry, and while perhaps scarcely

within the province of the Committee on Standards and Policies, yet it is believed that the Association may well note with sympathetic approval this introduction of psychiatric concepts and techniques into general medicine. It has seemed to some observers that the medical profession has been less prompt in recognizing and treating any emotional needs and maladjustments that may contribute to or underlie the patient's physical symptoms than has the nurse in realizing that the principles of psychiatric nursing should be applied to the patient in the general hospital. The chiefs of staff of such institution may well take a leaf from the Curriculum Guide for Schools of Nursing prepared under the supervision of the National League for Nursing Education. This prescribes that schools for nurses shall include a course of instruction in mental hygiene and psychiatric nursing. Internes would be much better prepared for the practice of medicine were their interneship to include a period of service on a psychiatric ward. A closer relation between psychiatry and general medicine with a resulting increase in awareness on the part of the practitioner as to the wealth of psychiatric problems in general medicine and the greater relief that will be brought to the patient should be welcomed.

The committee believes, too, that the policy of establishing a psychopathic ward in the larger general hospitals is one that should be encouraged. Such wards have, of course, long existed. Papers on the subject have been read at the meetings of the Association but their desirability may again be emphasized. Such wards promote recognition of the fact that there can be no clear-cut separation between mind and body. They afford facilities for the temporary treatment of patients suffering from transitory mental disorders which do not require so extreme a procedure as commitment to a state hospital. They provide immediate protection and treatment for persons developing sudden disturbances of behavior. Personality maladjustments will more frequently be studied in their incipient stages and their treatment be more successful when necessary facilities are easily accessible. Both patients and relatives are far more willing to take advantage of early study when such treatment is associated in their minds with general health measures. The psychopathic ward serves also an important function in the training of nurses, medical students and physicians.

The excellent schedule of minimum standards recommended in 1925 by the Committee on Standards and Policies under the chairmanship of Dr. W. L. Russell contained the following: "There must be one or more out-patient clinics conducted by the hospital in addition to any on the hospital premises." In view of the fact that during the intervening thirteen years an increasing number of psychiatrists have come to believe that community work should be a major function of the mental hospital and not merely an incidental one, that the institution should be the psychiatric centre of its district, the committee feels that this requirement may be reiterated. In many of the more populous communities other agencies provide well conducted psychiatric clinics both for adults and for children. In communities where such facilities are not otherwise available the mental hospital should conduct clinics not merely for its patients on parole but diagnostic and treatment clinics for adults and particularly for children. Since the problems presented by such clinics, espe-

cially by those dealing with the emotional and behavior disorders of children, differ so greatly from those met with in the state hospital wards, the director of clinics should be a specially trained and preferably a full-time physician.

ARTHUR P. NOYES, M. D., *Chairman*,
IRA A. DARLING, M. D.,
EARL D. BOND, M. D.,
WILLIAM C. GARVIN, M. D.,
CLARENCE B. FARRAR, M. D.,
MORGAN B. HODSKINS, M. D.,
WALTER L. TREADWAY, M. D.,
APPLETON H. PIERCE, M. D.,
ROCK SLEYSTER, M. D.,
ARTHUR H. RUGGLES, M. D.

REPORT OF COMMITTEE ON THE LEGAL ASPECTS OF PSYCHIATRY.

The Committee on the Legal Aspects of Psychiatry herewith submits its annual report for the year 1937-38. One meeting of the committee has been held, namely, on December 28, 1937, in New York City.

During the past year the coöperative activities previously reported between this committee and the Committee on Psychiatric Jurisprudence of the Criminal Law Section of the American Bar Association have continued. On September 29, 1937, during the meeting of the American Bar Association at Kansas City, the chairman of this committee met with representatives of the corresponding committees of the Bar Association, the American Medical Association and the American Neurological Association. The desirability of a study of the present status of psychiatric services in the courts and correctional institutions of the country was reiterated. Acting under the authority of the American Bar Association and of The American Psychiatric Association, a joint appeal for the necessary funds has been forwarded to one of the large foundations but has not as yet been acted upon. The committees agree upon the desirability and need of a factual groundwork for further activities in stimulating the greater interest of the legal profession and of the judiciary in the possible contribution of psychiatry toward a more effective administration of the criminal law. Certain other topics have been discussed, such as the desirability of providing for the mandatory commitment to a mental hospital of persons acquitted of crime by reason of insanity. Considerable interest is being displayed likewise in the possibility of preventive work in the schools. Another meeting of representatives of the committees of the Bar Association, the Neurological Association, and of this committee was held in Chicago on December 28, 1937, at which some of these topics were further explored. The representatives of the American Medical Association committee were unfortunately not able to attend.

At the meeting of the Criminal Law Section in Kansas City on September 29, 1937, the chairman by invitation was privileged to present to the section a review of the activities of the cooperating committees during the past ten years. It will be remembered that in 1927 Dr. Karl A. Menninger,

then chairman of this Committee, secured the cooperation of the Criminal Law Section, a cooperation which has continuously since then been active and enthusiastic.

Public interest in the matter of psychiatry as applied to criminal trial continues to be stirred from time to time, and very frequently in a sensational and undesirable manner. During the past year a highly publicized murder trial in Los Angeles again attracted attention to the highly objectionable introduction of partisan expert testimony, and demonstrated the fact that even the complicated California procedure fails to prevent the "battles of experts" so genuinely lamented by all thinking citizens. In this instance the defendant was first convicted of manslaughter, then in a separate trial before the same jury found to have been insane at the time of the killing, and therefore not guilty by reason of insanity. Later in a third trial, in another court, he was found to be presently sane, and, therefore, was released. Such episodes merely serve to retard the progress of psychiatry as an aid to criminal procedure.

Another item to chronicle comes from New York City in the form of a report to the Mayor by the Commissioner of Accounts regarding the abuse of lunacy commissions in that city, particularly in one of the boroughs. It was demonstrated rather effectively that the commissions are made up largely of laymen who apparently have political or family ties to the judges, that the reports are not only highly expensive but almost completely unreliable, and that they cost approximately $200,000 a year. Certain changes in the procedure were recommended and a bill was introduced by Senator Kleinfeld which was passed by both houses of the New York Assembly. In essence, the present procedure would have been altered by referring to the superintendents of state hospitals, or, in the City of New York, to the Psychiatric Division of Bellevue Hospital, the examination of defendants in whose defense insanity is pleaded. Unfortunately, there were some minor legal technicalities which resulted in the veto of the bill.

In New York also a legislative crime commission which has egregiously failed to distinguish itself for judicial procedures or methods started its investigation amid a barrage of radio announcers, flashlights and motion picture cameras. The chairman of this commission made various wild charges concerning the state hospitals, and more recently has made charges in advance of any investigation, concerning the administration of the Psychiatric Division of Bellevue Hospital. The procedure of this commission is another illustration of the very unfortunate manner in which politics are sometimes injected into professional matters. The commission has engaged almost entirely in "muck-raking," and has made no apparent attempt to secure any sound advice or to listen to constructive suggestions. Their line of attack on psychiatry appears to be (1) that sex criminals and murderers are not properly recognized by psychiatrists and are not kept in mental hospitals so as to protect society, and (2) that when sex criminals and murderers are apprehended psychiatrists try to send them to mental hospitals, saying that they are mentally sick when they are only malingering. These two ideas seem a little contradictory, but as the learned senators have stated on the stand, they know nothing about psychiatry

but they are nevertheless quite able by reading records of patients to know that they are malingerers. This situation illustrates forcefully the readiness of many laymen to make psychiatric pronouncements, even to the extent of doubting the very existence of so well recognized a syndrome as prison psychosis.

On the other hand, we are encouraged to find that in Pennsylvania a legislative commission has been so greatly impressed with the contribution of psychiatric clinics in criminal courts that they have seriously considered recommending their compulsory establishment. It is likely that the final result will be recommendation of legislative authority for the establishment of clinics but that such clinics will not be required, in view of the fact that trained personnel for the maintenance of psychiatric clinics is still inadequate in numbers.

It has been called to the committee's attention that in some quarters a retreat from the psychiatric position has been enacted into law or regulation. It is reported, for example, that in New York State it is no longer required that the superintendent of an institution for defective delinquents be a psychiatrist. The struggle for the recognition of the need for the psychiatric dealing with the problems of the mentally ill, the mentally defective and defective delinquents has been a long and uphill one, and all recessions from application of this principle are considered by your committee to be unfortunate.

We are privileged to announce that meetings of a committee appointed by the American Law Institute have been held to consider the possibility of an entire change of procedure for dealing with young criminals. A group of jurists, professors of law, together with two sociologists and two psychiatrists, have held a number of prolonged sessions and are in unanimous agreement not only with regard to the present failure of criminal procedure, but also that there are no fundamental constitutional or other legal difficulties standing in the way of new legislation which would entirely revise present methods of dealing with offenders and probably provide methods vastly more effective.

The gist of the report, which has not been published, is that entirely new juridical and treatment procedures be established for offenders between 16 and 21 years of age. The proposal is that a criminal court for such offenders shall consist of two branches, one to find the facts as to "guilt" and the other to act as a disposition or treatment tribunal or board, the functioning of which shall be based on the needs for the better protection of society and full consideration of the possible rehabilitation of the offender. This proposed board or tribunal is to be composed of those who by training or experience can be classified as legal, sociological, penological and psychiatric experts.

Among the questions that arose was one with regard to the part that psychiatry should play both in the functioning of the Board of Disposition or Treatment and in the actual treatment measures as they might be variously established. The number of psychiatrists who are well trained in understanding all the phases of mental life, normal and abnormal, which play a part in the genesis of criminalistic attitudes and behavior was questioned. It was recognized that here was a field of great importance to be developed in order that the whole organized plan might be successful.

Your committee is thoroughly convinced that one of the most glaring obstacles to public confidence in the psychiatrist as an aid to criminal justice lies in the appearance of psychiatrists in criminal cases as partisan witnesses. Your committee subscribes to the principle now being followed in the establishment of psychiatric panels to the Federal District Courts, such panels consisting only of diplomates in psychiatry of the American Board of Psychiatry and Neurology. With the existence of such panels the court appointment of panel experts would be above question. Until such time as panels of this sort are established and used, your Committee believes that no psychiatrist should enter or appear in a criminal case for one party or the other unless as a condition precedent it is agreed that he may and shall examine the defendant with the experts employed by the opposing party; and that he shall be allowed to give his testimony regardless of which side such testimony would favor. Your committee believes that the adoption of this principle by the Association would have a salutary effect upon the members of the Association and would be a very distinct benefit to the cause of psychiatry by restoring public confidence in the psychiatric expert witness.

In closing, the chairman wishes to express to the members of his committee and to the members of the cooperating committees, particularly Mr. Louis S. Cohane, the chairman of the Bar Association Committee, his appreciation of their helpful assistance and encouragement during the past year.

WINFRED OVERHOLSER, M. D., *Chairman,*
V. C. BRANHAM, M. D.,
R. E. BUSHONG, M. D.,
BERNARD GLUECK, M. D.,
MENAS S. GREGORY, M. D.,
WILLIAM HEALY, M. D.,
RAYMOND F. C. KIEB, M. D.,
LEROY M. A. MAEDER, M. D.,
PAUL L. SCHROEDER, M. D.,
SYDNEY K. SMITH, M. D.

THE COMMITTEE ON PSYCHIATRIC SOCIAL SERVICE.

The Committee on Psychiatric Social Service begs me to submit the following report. The attention of the members is called to last year's report and also the report of 1934. Many of the items covered by these reports are still in the opinion of the committee of urgent importance to the members of this Association.

Because of rapid and profound changes in the field of general social work, and because of the increased demand for psychiatric social workers in all fields, it is true and has become apparent that the training and practice of psychiatric social work is not satisfactorily organized and clarified. The American Association of Psychiatric Social Workers has contacted this committee on numerous occasions during the past year asking for viewpoints of our Association. Questions have been raised as to what help the American Psychiatric Association might give them in maintaining high standards of

training opportunities. This committee would recommend that The American Psychiatric Association officially approve and encourage the adoption by public hospitals of adequate facilities that will tend to extend this type of training and service. It is the opinion of this committee of The American Psychiatric Association that training for psychiatric social workers should invariably include clinical experience in psychiatric units providing *adequate* supervision of the students.

The American Association of Psychiatric Social Workers is raising the question as to whether or not it should try to maintain its identity in view of the fact that all social workers are now being trained to some degree in the dynamics of human behavior and are approaching case work in the same general way that the psychiatrically trained social worker functions. This committee feels that there should be a group of workers more thoroughly trained in social psychiatry and mental hygiene who may be expected to function on a higher professional level as they work in cooperation with the psychiatrist on the more serious mental problems. This committee feels the need for an association of well qualified psychiatric social workers active in the psychiatric field that can concern itself with the technical procedures and organization of work in that field. This committee feels that it is highly important for the members of The American Psychiatric Association to recognize the fact that throughout the country undergraduate student social workers are being given instruction in psychiatry under the names of social psychiatry, medical psychology, social case work, mental hygiene, etc., and that our members should become critically interested in what type of training is being given, and in many cases, more active in seeing that this instruction is acceptable in type and modern in character.

The committee wishes to express its sincere approval of the increased attention that has been given by the Program Committee in this year's program to the problems of the relationships between the professions of psychiatry and social work.

SAMUEL W. HARTWELL, M. D., *Chairman*,
EARL W. FULLER, M. D.,
MESROP A. TARUMIANZ, M. D.,
GEORGE S. STEVENSON, M. D.,
PAUL E. KUBITSCHEK, M. D.

REPORT OF THE COMMITTEE ON PSYCHIATRY IN MEDICAL EDUCATION.

We believe that this committee can best fulfill its purpose by calling attention to the work being done in this field, urging the Association, both collectively and individually, to forward the work and, finally, perhaps emphasize certain principles.

It is now generally understood and accepted that man, either in health or in sickness, is not divisible into physical and mental halves. Anatomy, both gross and histological, physiology, morbid anatomy and microscopic pathology, all have their natural and complementary studies in the domain of psychological medicine. Each institution has curricular problems peculiar to

itself, but in the preclinical years of the medical education of the student, there should be included the study, understanding and proper alignment of psychology, particularly in its more dynamic medical aspects, personality studies, psychobiology and an introduction to psychopathology. During the clinical years, naturally clinical psychiatry will be presented but the emphasis should not be on so-called psychiatric entities, but rather on syndromes, reaction types, psychopathology formulations based on long section studies, opportunities to study individual patients and to work in out-patient departments, where important correlations may be made through small group discussions and clinical clerkships. For those students who have elected to pursue a psychiatric career, there should be opportunities for elective work.

The decision as to the proper number of hours to be devoted to psychiatry in medical education is a very moot and difficult question. Even though the number of hours allotted at the present time is admittedly not sufficient, yet we cannot be too arbitrary but should strive to reach our objective by constant demonstration of the need and practical import of psychiatry. In one of the leading medical schools, 16 hours are allotted during the first year, 16 hours in the second year, during the third year for a two-month period seven hours weekly are available and during the fourth year one morning a week over a period of two months is spent on the psychiatric ward service.

It is gratifying to be able to report that the leaven of psychiatric usefulness is working and, in general, more time is being secured for psychiatric teaching.

The committee is compelled to leave untouched the important matter of the type of pre-medical instruction which will permit the student to begin his medical studies with a psychiatrically receptive attitude. In this field more fact finding is needed.

Finally, your committee suggests that a session of the program of The American Psychiatric Association and other psychiatric associations could profitably be devoted to teaching problems.

EDWARD A. STRECKER, M. D., *Chairman,*
ADOLF MEYER, M. D.,
FRANKLIN G. EBAUGH, M. D.,
LLOYD H. ZIEGLER, M. D.,
TITUS H. HARRIS, M. D.

REPORT OF COMMITTEE ON RESOLUTIONS.

Fellow Members:

The members of your Committee on Resolutions have conferred together and have considered numerous items upon which the joint assembly of The American Psychiatric Association might wish to express a unanimous opinion of approval.

There is a tendency for such resolutions as are enacted by the joint assembly to become somewhat stereotyped, thereby losing in force and emphasis what they gain in authority. Your committee, therefore, felt justified

in restricting the resolutions which it now offers for your action to those matters which seemed to it to be of paramount importance. It submits the following:

(1) *Be it resolved,* That the Association express its appreciation for the fine leadership of President Chapman, the excellent program arranged by Dr. Roscoe Hall, and the efficient functioning of Secretary Sandy.

(2) *Be it Resolved,* That the skill, labors, and efficiency of Dr. Glenn Myers and his Committee on Arrangements be particularly commended in view of the most satisfactory accomplishment of this assignment in spite of the size of the task and the special difficulties created by geography.

(3) *Be it Resolved,* That special commendations go also to our able executive Assistant, Mr. Austin Davies, and his secretary, Miss Dorothy Rubenstein, whose faithful labors throughout the year were of such great assistance to the officers, the Council, the committees, and the organization as a whole. For arranging the special train to the convention, those members fortunate enough to have been able to avail themselves of it are especially grateful, and for its excellent cooperation in making this possible, the Santa Fe Railroad is likewise to be commended and thanked.

(4) *Be it Resolved,* That the members of The American Psychiatric Association who are assembled in this convention express their gratification at the safe arrival in London of their fellow member, Professor Sigmund Freud, and that a cablegram to this effect be sent to him immediately by the Committee on Resolutions.

Respectfully submitted,

KARL A. MENNINGER, M. D., *Chairman,*
E. W. ALLEN, M. D.,
HORACE G. RIPLEY, M. D.

Comment.

PARENT SUICIDE AND CHILD MURDER IN JAPAN.

The unusual frequency in Japan of the double suicide of parents together with the slaying of children is the subject of an article by Dr. Shigeyuki Komine in the March 1938 issue of *Psychiatria et Neurologia Japonica;* and as representing a peculiar sociological phenomenon his findings are of interest to report. Assembling his data mainly from press notices Dr. Komine divides the past seventy years into three periods. In the first, from 1868 to 1912 (the Meiji period) 263 cases of suicides of this type are reported; in the second period, from 1912 to 1925 (the Taisyo period) 851 cases; in the third period, from 1925 to date (the Syowa period) 4,323 cases. Making allowance for the difficulty in obtaining complete data in earlier years, Komine lays emphasis on the increased frequency of suicides of this kind in recent years, and suggests their association with changed social economic conditions. As precipitating factors family discord and sickness are assigned a conspicuous place. It is of particular interest that under the heading of sickness are included many cases which this observer regards as psychoneuroses, with hysterical conditions especially frequent. After one has taken due account of the possible differences in diagnostic opinion it is worth while to take note of this observation, in view of a fairly widespread belief that the psychoneuroses are relatively benign conditions, and in particular that they do not lead to suicide. Komine comments upon the affect changes observed in the cases of attempted suicide. He found that from the time the patients had decided to commit suicide and child murder consciousness was more or less disturbed and that afterward there was evidence of a degree of amnesia, sensory and motor symptoms were often present, the death wish disappeared entirely and a character change appeared to take place. In many of the cases were noted resemblances to the so-called "shell shock" of the Great War and to psychoneuroses associated with volcanic eruptions and earthquakes and to the traumatic neuroses.

Parent suicide with child murder is a phenomenon well known to psychiatrists everywhere, and is a tragedy with which readers of the daily newspaper are not unacquainted. In psychotic cases, depressive delusions of various types motivate the act; sometimes identification of child and parent is so close that the child murder seems almost to be merely a part of the suicidal process rather than an independent act. Cases not established as psychotic in which destitution plays a part are also familiar. The situation in Japan is remarkable chiefly in the high incidence of these cases as compared with those reported elsewhere. Komine offers the reasonable suggestion that the phenomenon may be linked up with the ancient mores in the family structure in which the influence of the old feudal system is still clearly recognizable.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY RECOGNIZED IN NEW MASSACHUSETTS LEGISLATION.

In the January issue of the JOURNAL comment was made upon certain legislation recommended by the Special Recess Commission appointed to study the care of the mentally ill in Massachusetts. Although certain provisions of the bill were pointed out as objectionable, such as the creation of a three-man department, rather than vesting responsibility in a commissioner, the requirement of a diploma in psychiatry from the American Board of Psychiatry and Neurology as a qualification for the commissioner and superintendents was pointed out as significant and progressive.

The bill filed by the Commission suffered considerably at the hands of the Ways and Means Committee, but thanks to the vigilance of an enlightened group in the Senate a law has been enacted which is, on the whole, an excellent piece of legislation. Whereas the Ways and Means Committee would have eliminated the boards of trustees as a factor in the appointment and removal of superintendents, vesting this power instead in the commissioner (who in the present state of affairs would be almost inevitably subject to political pressure), that power is now retained as it formerly existed. *For the first time,* the value of certification by the American Board of Psychiatry and Neurology is legally recognized. The

commissioner and assistant commissioner are required to possess a diploma in psychiatry, as well as to have at least five years' experience on the resident administrative staff of a state or federal mental hospital or its equivalent; and superintendents hereafter appointed must be diplomates with at least four years of similar experience. In addition, the superintendents are now given the right of appeal to the Superior Court in the event of removal, so that their position is stronger than previously. It is interesting to note that *all* the superintendents save one are now diplomates, and that the two former commissioners, Drs. May and Overholser, and the latter's assistant commissioner, Dr. Joseph E. Barrett, likewise hold certificates from the American Board. In addition, more physicians in the state hospital service of Massachusetts are now certified by the Board than is the case in any other state. The need of explicit statutory qualifications was sadly illustrated by the debacle of 1936, when Governor Curley appointed in place of Dr. Overholser a physician wholly lacking in the necessary experience and training.

By the new legislation the name of the department is changed to the Department of Mental Health, a title for the use of which an excellent example was set by Pennsylvania in 1923. The control of the Department is vested in a commissioner, appointed for six years, who is empowered to appoint his own assistant commissioner.

After a stormy period of 20 months, life in the Massachusetts State Hospitals appears to be somewhat calmer. Last May, nearly one year after Governor Hurley, former Governor Curley's successor, publicly demanded that Dr. David L. Williams, the commissioner, resign or be removed (during which time Dr. Williams did not go to his office), the Governor removed him on grounds of physical disability. During the Winter and Spring the State Auditor conducted an inquisition at several of the hospitals, going far afield from matters properly the subject of audit and "discovering" that many "improper activities" had escaped his notice in previous audits. Matters finally reached the interesting stage when another department of the state government employed an outside firm to audit the Auditor's audits, and with devastating effect! Since that time the militant activities of

the State Auditor have been considerably curtailed. So far, at least, only one of his demands for a scapegoat has been satisfied, and no additional superintendents have been forced out.

The JOURNAL sincerely hopes that under the new and strengthened law (Ch. 486, Acts of 1938) the appointment of a suitable person as commissioner may soon be announced, and that under his leadership Massachusetts once again may be set upon the road toward regaining the eminent position which it formerly held in the field of state hospital administration.

News and Notes.

DR. TREADWAY HEADS U. S. PUBLIC HEALTH SERVICE HOSPITAL AT LEXINGTON, KY.—On July 1, 1938, Dr. Walter L. Treadway, who since 1929 had been on the staff of the Surgeon General at Washington, D. C., in charge of the Division of Mental Hygiene, took up his duties as Medical Officer in Charge of the U. S. Public Service Hospital at Lexington, Ky. This hospital was the first of the so-called Narcotic Farms established by the Federal Government for the care of addicts, and was opened for the reception of patients May 25, 1935, with Dr. Lawrence Kolb as its first Superintendent, or Medical Officer in Charge.

Dr. Treadway entered the Public Health Service in 1913, and passed through the several grades of the career corps, occupying the rank of Assistant Surgeon General since April 1930, at which time the Narcotics Division in the Surgeon General's office became the Division of Mental Hygiene.

It is not as a stranger that Dr. Treadway goes to Lexington, but rather as one intimately familiar with the details and purposes of the hospital with the planning of which, as Assistant Surgeon General, he had been so directly concerned. On the occasion of dedicating and opening of the Lexington institution Surgeon General Cumming said to Dr. Treadway: "I express to you formally my sincere congratulations upon the dedication of the institution at Lexington, which is really the culmination of many years work and vision on your part, for I feel quite sure that the whole conception and realization of these narcotic farms have been due more to you than to me."

On the same occasion Mr. Sanford Bates, then Director of the Bureau of Prisons, wrote as follows: "You have every reason to feel tremendously proud of the achievement which you have wrought in the new hospital at Lexington. The character and type of the institution is such that no matter who succeeds to its administration it cannot ever become an old time prison. Whatever else may be said, it must be admitted that we have turned from

the day when any sort of person was considered competent to look after the delinquent and dependent class. You have had an important part in bring home, not only to the Federal Government but to the government of the states, the wisdom and importance of professionalizing this type of public service."

Among his many duties as Assistant Surgeon General should be mentioned the organization of the medical and hospital service of the federal prison system with the establishment of psychiatric services in certain of these institutions. Dr. Treadway has also served as Chairman of the Mental Hospital Survey Committee, which during the past several years has been taking stock of psychiatric facilities throughout the country. As Chairman of the Program Committee he has been active in the organization of a national symposium on mental health to be given under the auspices of the American Association for the Advancement of Science at its meeting in Richmond, Va., in December 1938.

The arduous duties of his office during his long term of service and the pioneering work he was called upon to do could not fail to take toll of his health and strength, and it is hoped that in his new post Dr. Treadway may find a measure of leisure for some of the relaxations and avocations he knows so well how to enjoy.

FELLOWSHIP AWARDS.—The National Committee for Mental Hygiene announces the following fellowship appointments for one year's training in extramural psychiatry. Under a grant from the Commonwealth Fund: Dr. Grace E. McLean of the Pilgrim State Hospital (New York) to the Cleveland Child Guidance Clinic; Dr. John A. Rose, Cornell Student Health Service to the Philadelphia Child Guidance Clinic; Dr. John Russell of the Osawatomie (Kansas) State Hospital to the Los Angeles Child Guidance Clinic; Dr. Rex E. Buxton of the Iowa Psychopathic Hospital to Judge Baker Guidance Center; Dr. W. B. Curtis now on the Neurological and Neurosurgical Service at Bellevue Hospital to the Mental Hygiene Clinic at Louisville. Under local provision: Dr. William L. Holt, Jr., of the Worcester State Hospital to its Child Guidance Clinic; Dr. Norman Westlund of Traverse City (Michigan) State Hospital to the Children's Center at Detroit.

THE NEW PUBLICATION *Psychiatry*.—The initial number of this quarterly bears the date, February 1938. The subtitle, *Journal of the Biology and the Pathology of Interpersonal Relations,* indicates in a general way its scope. Published by the William Alanson White Psychiatric Foundation, Inc., this first issue is dedicated to the memory of Doctor White.

The contributors are: Ross McClure Chapman—"William Alanson White, M. D."; Edward Sapir—"Why Cultural Anthropology Needs the Psychiatrist"; Ernest E. Hadley—"Unrecognized Antagonisms Complicating Business Enterprise"; Harold D. Lasswell—"What Psychiatrists and Political Scientists Can Learn from One Another"; William V. Silverberg—"The Personal Basis and Social Significance of Passive Male Homosexuality"; Kingsley Davis—"Mental Hygiene and the Class Structure"; Joseph Chassell—"A Clinical Revision of the Experience Variables Record"; Albert Millard Dunham, Jr. "The Concept of Tension in Philosophy"; Harry Stack Sullivan—"Psychiatry: Introduction to the Study of Interpersonal Relations."

There are sections devoted to editorials and to reviews of books and of periodical literature. The latter gives brief descriptions of the contents of individual numbers of the periodicals reviewed. In a separate reference list are presented the bibliographies of contributors.

The JOURNAL extends its cordial greetings and good wishes to *Psychiatry*.

AUTOFELLATIO PRIORITY REPORT.—Dr. Eugene Kahn, whose note on this subject appeared in the last issue of the JOURNAL, informs us that he has received from Dr. Louis T. Bragman of Binghamton, N. Y. reprints of a paper of his entitled "A Case of Autofellatio" which was published in *The Medical Journal and Record* for October 19, 1927. Dr. Bragman also mentioned a still earlier report of a similar case by W. H. Dukeman which appeared in 1889 in the *Pacific Medical Journal*.

DR. KOLB TRANSFERRED TO THE SURGEON GENERAL'S OFFICE.—On July 1, 1938, Dr. Lawrence Kolb, formerly Superintendent of the U. S. Public Health Service Hospital at Lexington, Ky., was

transferred to Washington to succeed Dr. Treadway as Assistant Surgeon General in charge of the Division of Mental Hygiene.

Dr. Kolb entered the Public Health Service as Assistant Surgeon in 1909, attained the rank of Surgeon in 1921, and of Senior Surgeon in 1930.

Early in his career he served for several years at the Immigration Station on Ellis Island, where he was especially concerned with the mental examination of immigrants, following which he organized and conducted for several years a U. S. Public Health Service Hospital for the treatment of nervous patients at Waukesha, Wis.

In 1923 Dr. Kolb went to Washington to take up research in drug addiction at the Hygienic Laboratory (now the National Institute of Health.) Among his various assignments was an extended period abroad for the purpose of making studies on the intelligence of persons desiring to emigrate to the United States, during the course of which data were collected on about 3000 cases in six countries. Prior to going to Lexington to open the new institution for the treatment of drug addiction Dr. Kolb had organized and conducted the Department of Justice Medical Center at Springfield, Missouri. He has had a rich and varied experience, and his career had led logically to his appointment as successor to Dr. Treadway.

Death of Dr. Edward Ryan.—On July 23, 1938, occurred the death at Kingston, Ontario, of Dr. Edward Ryan, one of the veteran psychiatrists of the Province, and from 1905 until 1930, Superintendent of Rockwood Hospital at Kingston.

During the Great War Dr. Ryan served with the Canadian Expeditionary Force overseas, and on his return to Canada in 1917 acted as medical director for the Military Hospitals Commission (later the Department of Soldiers' Civil Reestablishment), of Military District No. 2, with headquarters at Toronto. Besides his professional duties Dr. Ryan was active in various public capacities and was at one time Mayor of the City of Kingston. During his superintendency at Rockwood Hospital he organized the Ontario Neuropsychiatric Association, and its first meeting was held at

that hospital. With his death there passes another of the older generation of psychiatrists who played so great a part in the development of the care of the mentally ill in Canada.

THE MALCOLM A. BLISS PSYCHOPATHIC INSTITUTE.—An important psychiatric event occurred June 26, 1938, at St. Louis, Mo., with the laying of the corner stone of the Malcolm A. Bliss Psychopathic Institute. This new hospital will have beds for about 185 patients, with ample space for laboratories, classrooms, and an out-patient department for both adults and children. The cost is estimated at $1,500,000. The medical services will be supplied by St. Louis and Washington Universities.

SOUTHERN PSYCHIATRIC ASSOCIATION.—The annual convention of the Southern Psychiatric Association will be held in Atlanta, Ga., October 10-11, 1938. The officers are George P. Sprague, M. D., Lexington, Ky., President; Newdigate M. Owensby, M. D., Atlanta, Ga., Secretary.

AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY.—The first American Congress devoted to a consideration of medical, nursing and other problems associated with human reproduction will be held in Cleveland, Ohio, from September 11 to 15, 1939, inclusive. It will be designated as The American Congress on Obstetrics and Gynecology. The promotion and sponsorship of The Congress has been delegated to the American Committee on Maternal Welfare, Inc. The latter includes the following organizations in its membership:

American Association of Obstetricians, Gynecologists and Abdominal Surgeons.
American College of Surgeons.
American Gynecological Society.
American Hospital Association.
American Medical Association Section on Obstetrics and Gynecology.
American Nurses Association.
American Protestant Hospital Association.
American Public Health Association.
Central Association of Obstetricians and Gynecologists.
Chicago Maternity Center.
Maternity Center Association of New York.

National League of Nursing.
National Medical Association.
National Organization for Public Health Nursing.
New England Obstetrical and Gynecological Society.
Pacific Coast Society of Obstetrics and Gynecology.
Southern Medical Association.
U. S. Bureau of the Census.
U. S. Children's Bureau.
U. S. Public Health Service.

The purpose of this Congress is to afford opportunities for discussing and publicising the problems associated with human reproduction and the health of women and new born babies. The scope of the projected Congress has been extended beyond that of similar assemblies held in the past and will devote much attention to the wider public welfare aspects of problems which have been considered frequently of purely medical interest.

In addition to the scientific sessions it is planned to provide for several evening meetings at which speakers of prominence will discuss the broader aspects of the subjects for the lay public. There will also be prepared a comprehensive exhibit—scientific, educational, technical and commercial, which should add greatly to the general interest of the Congress.

The Chairman of the Executive Committee is Dr. Fred L. Adair; the Chairman of the Program Committee is Dr. Frederick H. Falls, both of Chicago, Ill.

HARVEY CUSHING HONORED AT OXFORD.—On July 16, 1938 the honorary degree of Doctor of Science was conferred by the University of Oxford upon Dr. Harvey Cushing, professor of neurology at Yale University, formerly professor of surgery at Harvard University.

At the ceremony to do Dr. Cushing honor were gathered colleagues, former pupils and other friends from many parts of the Continent and also from the Peter Brent Brigham Hospital in Boston where, as surgeon-in-chief, Dr. Cushing rendered such long and distinguished service.

In presenting him for the degree, Mr. Cyril Bailey, D. Litt., the Public Orator, referred to Dr. Cushing as a surgeon who had removed more than two thousand brain tumors, an innovator in technique accomplished alike with pen as with scalpel, and who in

monumental monographs has left the record of his pioneering. As director of U. S. Base Hospital No. 5 in France his peerless skill was devoted to the wounded soldiers of the Great War.

It was fatefully fitting that the University of Oxford which had been adorned by Sir William Osler as Regius Professor of Medicine should in this way pay tribute to Sir William's friend and biographer, Dr. Cushing.

In stately Latin, lightened with a touch of humor and rich in idiom for the ears of the elect the Public Orator spoke—whose words may be Englished thus:

Behold a surgeon of foremost rank, who more than two thousand times with happy result attacked with his steel, tumors of the brain (as Ennius would have it—"tumescens ferro 'cere-comminuit-brum' ").

Sprung from a line of physicians including father, grandfather, great-grandfather, he received from Yale University not only his doctor's degree but his attestation as a baseball player as well; he proceeded to Europe to continue his studies, and returning home set about the development of the most difficult of operative techniques, that dealing with the human brain—which he once called the Symplegades of surgery. In establishing the place of this new art the logic of his words was supported by the evidence of his deeds. He made it clear that the more successful practitioner of this art is he who proceeds slowly. He recognized the remedial value of electricity; perhaps he mistrusted Nature's healing powers, certain it is he left nothing to chance.

For 20 years as professor at Harvard and at Yale he imparted to his pupils that which he had learned. Many of them today have achieved great fame for themselves.

He made use not alone of the knife but also of the pen. Has he not written many technical works on the nerves, on the structure of the brain, on the pituitary gland? Has he not provided for our enlightenment a monumental biography of his friend William Osler, a most notable work?

And now in the hour of his retirement, when he has come to us as our guest, that we also may offer our tribute to a man already laden with honors, I present to you that most eminent surgeon, Harvey Cushing, Companion of the Most Illustrious Order of the Bath, that he may be admitted to the degree of Doctor of Science, *honoris causa*.

Book Reviews.

THE COMMON NEUROSES—THEIR TREATMENT BY PSYCHOTHERAPY. Second edition. By *T. A. Ross, M. D.* (Baltimore: William Wood & Co., 1937.)

Those who are acquainted with the first edition of Dr. Ross's book will find its many virtues incorporated *in toto* in the present volume, with considerable valuable additional material. As the title states, the work is addressed primarily to the general practitioner and the medical student, and this fact to a great extent shapes its form and choice of content; but there are few specialists in the field who could not in one way or another profit from a careful study of its clearly defined concepts and well chosen illustrative case-material.

The author recognizes that even the simplest types of psychotherapy require a background of theoretical knowledge and an etiological point of view if they are to be anything more than "faith cures," and accordingly presents a well-defined and clinically illustrated exposition of his own views on the etiology of the neuroses. That these views make no pretense at originality, representing as they do a combination of Dejerine, Freud and others, is frankly acknowledged by the author, and in no way detracts from the pedagogic value of his presentation.

Symptomatology and differential diagnosis are discussed only insofar as this is necessary for an understanding of the author's exposition of psychotherapy. One of the few glaring omissions is in the chapter on the differential diagnosis of the anxiety reactions, where no mention is made of hyperthyroidism. It is perhaps in part due to the intended utilization of the book by general practitioners that 140 pages of it are devoted to the anxiety reactions as compared to less than 50 on hysteria and only 6 on the obsessional-compulsive states. Yet this practical approach never lures the author into the common mistake of neglecting theory altogether. Above all, he succeeds in keeping his presentation on a level which can be understood by the student and general practitioner without descending to facile optimism and unscientific over-simplification. The volume is therefore heartily recommended also to all young physicians entering upon a career of psychiatric specialization.

F. G. E.

DIE VITAMINE UND IHRE KLINISCHE ANWENDUNG. By *W. Stepp, J. Kühnau, H. Schroeder.* (Stuttgart: Ferdinand Enke, 1937.)

This book contains a very complete survey of modern knowledge about vitamins. The authors who have worked for a long time in this special field, emphasize that a strict discrimination between hormones and vitamins is not justified. They support the biologic conception of Euler, who sees in vitamins and hormones in general catalysts and stimulating factors of nature. Both have their special interplay in the organism, for example a lack or surplus of

vitamins can appear as a hormone effect. The vitamins are not needed for energy; they supplement food stuffs and possess the quality of medicaments.

Vitamin A is especially accumulated in the liver, but is also found in the whole body. It seems to stimulate the oxidative processes in the organism and is correlated with the metabolism of fats and lipoids. It is antagonistic to thyroxin. A number of other correlations are described. Vitamin A deficiency is a distinct systemic disease of the ectoderm. In vitamin A deficiency one can see various eye disturbances, skin changes, epidermisation, deficiency of smell, ozoena, hoarseness, bronchitis, intestinal dysfunctions and frequent concretions of bladder and kidney. The glands show a decreased secretion. The adrenal glands are probably affected and also the sexual glands. In the central nervous system there are sometimes degenerations of the cord.

Vitamin B_1 has an outstanding influence upon carbohydrate metabolism. As far as the cramp-avoiding effect of B_1 is concerned, it is especially important for the sugar metabolism of the central nervous system. The need of the basal ganglia and the prosencephalon is especially great. Without B_1 the metabolic processes in the central nervous system cannot proceed. The danger of B_1 hypovitaminosis is great in all cultures, where little B_1 and much carbohydrate are consumed. The first signs of vitamin B_1 hypovitaminosis are lack of appetite, obstipation, asthenia, headache and migraine. One sees beri-beri infrequently at present. Much more frequent are the hypovitaminoses such as alcohol-gastrogenic, diabetic, pregnancy polyneuritides, etc., as well as funicular myelosis. Korsakow's syndrome is according to the authors probably a direct effect of vitamin B_1 deficiency of the brain.

The vitamin B_2 complex contains a number of independent vitamins like vitamin B_2 proper, the antipellagra (P-P) factor, the extrinsic antanemic factor, the sprue factor, the filtrate factor, the growth factor and a few others. The B_2 proper is essential for growth. The energetic oxidative processes of the cells apparently cannot proceed without vitamin B_2, which has a special influence upon the carbohydrate metabolism. Some parts of the vitamin B_2 complex are correlated with the function of the adrenals. The P-P factor is not alone responsible for pellagra and black tongue. These diseases are complex avitaminoses. The P-P factor influences the sulphur metabolism in an unknown way. The antanemic extrinsic factor is well known in the pathology of pernicious anemia. Hypovitaminosis produced by the deficiency of the B_2 complex shows gastro-intestinal symptoms, changes of the tongue and mucous membranes, characteristic skin disturbances and nervous signs. Pellagra is a definite vitamin B_2 deficiency. The authors believe that B_2 deficiency is at least partly responsible for the syndrome of Adie, acrodynia, lepra and multiple sclerosis. This deficiency may also produce hyperchromic and hypochromic anemias.

Vitamin C seems to play a significant rôle in the processes of oxidations and dehydration. The clinical picture of vitamin C deficiency is produced by the lack of the intracellular cement substance of the endothelial cells. It is quite possible that the importance of vitamin C for the organism lies in the influence upon the carbohydrate metabolism of the liver. Scurvy is seldom seen at the

present time. However the hypovitaminotic prescorbutic systems should not be overlooked. Vitamin C has a special correlation with hemorrhages, allergic diseases and diseases of dental and bone systems. Vitamin C influences pregnancy, lactation and growth.

Vitamin D increases the oxidative processes in the organism. It is in correlation with both the thyroid and the parathyroid glands. Rickets, osteomalacia, tetany, allergic processes are well influenced by vitamin D treatment.

Vitamin F is still not well known as far as human pathology is concerned. It is the fertility vitamin of certain animals. The authors describe several disturbances in which vitamin E may be of help; for example, habitual abortion and puerperal psychosis.

Vitamin H is especially important for children and plays a great rôle for the proper functioning of the skin as well as for the utilization of some fats and proteins. In addition vitamin H deficiency produces disturbances in the spinal cord of the rat.

The antihemorrhagic vitamins, factor T and vitamin K as well as the permeability factor P are briefly described.

The authors emphasize that there is a definite correlation between certain vitamins as synergists and antagonists. A quantitative relationship exists between specific vitamins and the main constituents of the diet. The dosage and the choice of the necessary vitamin is therefore important. For most vitamins there are already quantitative tests; hypervitaminoses are described especially for A and D, however there is no hypervitaminosis known for vitamin C. Some special diets may be lacking in certain vitamins as for example the lack of vitamin C which occurs in a diet for intestinal diseases.

The reader interested in neuropsychiatry may find in this survey summaries of the modern conceptions about the relationship of particular vitamins to some nervous and mental diseases of unknown etiology like multiple sclerosis. Furthermore he may find a résumé of the rôle of vitamins in metabolism in general and metabolism of the central nervous system in particular. Since the insulin treatment of schizophrenia has again put more emphasis on the physiological processes underlying mental diseases, the question of the function of vitamins in the metabolic and especially oxidative processes of the brain has become of general interest in psychiatry. This survey gives only hints in this direction, but it may be used as a good reference book.

J. Silberpfennig,
Bellevue Psychiatric Hospital.

A Biological Approach to the Problem of Abnormal Behavior. By *Milton Harrington, M.D.* (Lancaster, Pa.: Science Press Printing Co., 1938.)

In a previous book "Wish-Hunting in the Unconscious" Dr. Harrington critically studied psychoanalysis but did not formulate his own approach to the problem of abnormal behavior. In this book he goes on to develop the

biological mechanistic basis of abnormal human behavior. On the whole, it may be stated that Dr. Harrington is better as a critic than as an original thinker, although his book is valuable and provocative.

First, as to the defects of the book. The book suffers from the underlying philosophy of the writer, which is to the effect that consciousness is an epiphenomenon and has no real relationship to the activity and conduct of the human being, thus accepting the position of Thomas Henry Huxley. This philosophic approach is merely one of despair. It is difficult to handle consciousness. It cannot be measured easily. It is something measurable only in terms of itself. It is the sum total of sensory and kinesthetic awareness—whatever that may mean—and yet it does not fit into the ordinary schemes of causation and is not easily measured. But it cannot be thrown out because of our lack of understanding or our logical difficulties. By discarding it, one finally gets reduced to the absurdity, which has long since been pointed out, of postulating an unconscious Shakespeare writing his great plays for an unconscious audience and performed by an unconscious set of actors, and this without impairing the realities of a glorious situation. Moreover, after Dr. Harrington has laboriously kicked out consciousness from the front door, he finally has to readmit it in his discussion, which is mainly *as if* he accepted consciousness as the real value of life. In his discussion of unconscious thinking, he very directly states that consciousness is the basis of mind and that there can be no such term as "unconscious mind," which seems to give away his central position. Thus, consciousness slips in again by the rear door.

The reviewer also believes that Dr. Harrington is too much swayed by what he calls the "law" of parsimony in science. As a matter of fact, there is no such law; it is merely a convenience to establish as few causes as possible. In actuality there is no one cause to anything. There is a flood of variables which have to be considered, and the more variables there are included, the greater the structure of results. What he uses as a guiding principle has been discarded in the practical workings of science long ago.

So much for criticism. On the whole, the book emphasizes that pleasure and pain, satisfaction and dissatisfaction, which in turn are created both by the constitution of the individual, the stimuli which flow in on him, and the standards which have been set up in him by the social milieu in which he finds himself nilly-willy, are the leading factors in the production and understanding of abnormal behavior. The emphasis on the biochemical mechanistic background is necessary at the present time. The adherence to things which are provable rather than those which are built up by metaphor, symbol and adroitness is especially important at this period of psychiatry and psychology.

Dr. Harrington builds up a dynamicism of conduct. The steps are discernible without recourse to too dubious interference. One valuable phase of his book lies in the consideration he has given to the absurdity of social requirement, so that an individual may be plunged into difficulties, not so much through his own defects as through the abnormal and impossible demands of society. The author emphasizes the fact that unsatisfactory relationships

breed a chain of events which finally leads to crime and neuroses, as well as to the minor deviations from satisfactory and satisfying human conduct.

The book suffers from the defect that the author is too much occupied with the desire to contradict and displace the Freudian doctrines. Its value lies in the fact that the one-sidedness of psychoanalysis and the other allied approaches to human conduct needs to be corrected, certainly so far as present day psychiatry goes, by the vigorous demonstration that man and all his products are biological; that biochemistry, electric current and pharmacological experimentation—to cite only a few of the scientific approaches—can explain and also modify human conduct.

ABRAHAM MYERSON, M. D.,
Boston State Hospital.

INTRODUCTION TO THE RORSCHACH METHOD. A MANUAL OF PERSONALITY STUDY. By *Samuel J. Beck, Ph.D.*; preface by *F. L. Wells, Ph.D.* (Monograph No. 1 of the American Orthopsychiatric Association.) (Menasha, Wisconsin: George Banta Publishing Company, 1937.)

This volume will be welcomed by all who are interested in the Rorschach test, and who have long associated the author's name with the method of the test. The purpose, as stated in the first chapter, is "to provide a manual of Rorschach test procedure as followed by the writer and intended to be helpful in the practical application of Rorschach tests, whether in experimental or diagnostic undertakings." Accordingly, in Part I, response records are given in detail, and are scored and interpreted. Descriptive and explanatory material, tables of norms and other facts necessary for clarifying the technique, are given in Part II. The case material presented includes records on superior adults, feeble-minded, depressed, hypomanic, schizophrenic and neurotic patients, problem children, mental hygiene cases and adults manifesting conduct disorders. A selected bibliography with brief descriptive notes is appended and adds to the value of the book.

Systematic and theoretical discussions of the procedure are disappointingly absent. It is true that a chapter on psychological processes indicated by the various Rorschach factors lends an interpretative atmosphere; but the main function of the chapter is to supplement clinical diagnosis by translating test-manifestations into psychological traits and thence to indicate the personality groups of which these traits are frequently symptomatic. No attempt is made to give a comprehensive systematic basis of the traits discussed or for the personality groupings employed—the latter being the major traditional psychiatric classes.

The reader might legitimately hope for some more intimate relationship between the test procedure and theoretical outlook than the author has presented. This is not a criticism of the book, since the author did not set out to cover this aspect, but rather to give a useful manual for the guidance of those using the technique; and this he has done most admirably. But techniques of this sort can hope to refine differential diagnosis on the one hand, and psychiatric understanding on the other, only in so far as technique

and theory go hand in hand, enriching each other in the process. Mere multiplication of symptomatic pictures, however detailed and careful these may be, provides work for the technician, but does not necessarily add to the scientific insights. Every one using the test will undoubtedly gather insights as he proceeds. But perhaps a valuable theoretical stocktaking in relation to this test will be forthcoming in the near future, especially as the volume under review should make possible a more concerted attack on problems of personality differentiation by the Rorschach method than has hitherto been demonstrated.

W. LINE, PH. D.,
University of Toronto.

GANZHEITS-PROBLEMATIK IN DER MEDIZIN; ZUGLEICH EINE EINFÜHRUNG IN DIE MEDIZINISCHE ERKENNTNISSLEHRE. By *Prof. Dr. Theodor Brugsch.* (Berlin und Wien: Urban Schwarzenberg, 1936.)

This work is the result of the author's laborious attempt during many years to establish a reliable introduction to the science called Medical Epistemology. Dr. Brugsch is physician, teacher and researcher in medicine and has tried to discover how important teleologic and causal-analytic thinking could be in the medical as well as in all of the biological sciences. In the introduction the author states that the practitioner in medicine deals always with the living person and should always remember that in each patient he is confronted by a being composed of three different forms of being which present themselves as a unit: material, life, spirit. This unit is placed into a life sphere, which our language calls world or environment, as a somato-psychic totality. From birth until death the living person undergoes changes, such as development, maturation, aging, etc. Yet through all the variations the personal I, the particular somato-psychic totality of the individual I retains its identity even though processes called disease disturb the functioning of the organism from time to time.

In a very thorough-going and convincing manner the author discusses experience, recognition, science; the categories of thinking; concrete and symbolic thinking; the scientific world-view; the scientific world-picture; the biologic world-view and vitalism; totality; adjustment; constitution; norms, rules, types; abnormal constitution, constitution anomalies and ailing constitution; disease, inflammation, allergy; inheritance; body, soul, spirit.

Those who know the author's book *Allgemeine Prognostik* can understand how much hard work has gone into the making of that work. Perhaps they can also understand what an effort it must have cost him to finally reach the climax of his labor by putting into book form some of the accumulated wealth of his research findings as laid down in the present work. Much of his hardest work had to be done alone. However, the present work seems to reflect the author's conviction that he has progressed far on the road to prognostic predictability of man's behavior with medical epistemology. The whole of man and all of his behavior in his environment belong in the field of the medical sciences.

MATTHIAS MARQUARDT, M. D.,
Augusta State Hospital.

PSYCHOLOGY AND RELIGION. By *Carl Gustav Jung, M.D.* (New Haven, Conn.: Yale University Press, 1938.)

This book contains the Terry lectures as delivered by Dr. Jung at Yale University in October, 1937. (See announcement in this JOURNAL, Nov., 1937, p. 722.)

In the three chapters of the little book Jung gives (1) "a sort of introduction to the problem of practical psychology and religion," discusses (2) "facts which bear out the existence of an authentic religious function in the unconscious mind," deals (3) "with religious symbolism by unconscious processes."

Jung emphasizes that he approaches "psychological matters from a scientific and not from a philosophical standpoint." He wants to deal with religion only in its psychological, phenomenological aspect. The psychological phenomena of religion, as any other psychological phenomena, are "facts," are true, as "an elephant is true because it exists." For Jung religion is "a peculiar attitude of the human mind . . . . , a careful consideration and observation of certain dynamic factors, understood to be 'powers,' spirits, demons, gods, laws, ideas, ideals, or whatever name man has given to such factors as he has found in his world powerful, dangerous, or helpful enough to be taken into careful consideration as grand, beautiful, and meaningful enough to be devoutly adored and loved. . . . ." Religion is to be distinguished from creeds which are "codified and dogmatized forms of original religious experience."

Religious experience is of eminent importance in not a few neurotic persons. In their dreams, as well as in dreams of normal people, a great wealth of obviously unconscious material is dug up. Such material is not produced by any individual, but rather created in the collective unconscious of the race. "The fact is that certain ideas exist almost everywhere, and at all times, and they can even spontaneously create themselves quite apart from migration and tradition."

The scientific attitude cannot overlook that "the dogma represents the soul more completely than a scientific theory, for the latter expresses and formulates the conscious mind alone." Dogmas are encountered in all kinds of religion. "Such ideas were never invented. They came into existence when mankind had not yet learned to use the mind as a purposeful activity."

Jung warns lest "anybody should understand my observations to be a kind of proof of the existence of God. They prove only the existence of an archetypal image of the Deity which, to my mind, is the most we can assert psychologically about God."

To give some other quotations: "We carry our past with us, to wit, the primitive and inferior man with his desires and emotions, and it is only by a considerable effort that we can detach ourselves from this burden. If it comes to a neurosis, we have invariably to deal with a considerably intensified shadow. And if such a case wants to be cured it is necessary to find a way in which man's conscious personality and his shadow can live together."

"Man can live amazing things if they make sense to him."

"A dream or a vision is just what it ought to be. It is not a disguise for something else. It is a natural product, which is precisely a thing without ulterior motive."

"Religion is a relationship to the highest or strongest value, be it positive or negative." The relationship is voluntary as well as involuntary, that is, you can accept, consciously, the value by which you are possessed unconsciously. That psychological fact which is the greatest power in your system is the god, since it is always the overwhelming psychic factor which is called god. As soon as a god ceases to be an overwhelming factor, he becomes a mere name. His essence is dead and his power is gone."

"The gods first lived in superhuman power and beauty on the top of snow-clad mountains or in the darkness of caves, woods and seas. Later on they drew together into one god, and then that god became man. But the gods in our time assemble in the lap of the ordinary individual and are as powerful and as awe-inspiring as ever, in spite of their new disguise—the so-called physical function. Man thinks of himself as holding the psyche in the hollow of his hand. He dreams even of making a science of her. But in reality she is his mother and the maker, the psychical subject and even the possibility of consciousness itself."

"The well-meaning rationalist will point out that I am driving out the devil by Baalzebub and that I replace an honest neurosis by the cheat of a religious belief. Concerning the former I have nothing to reply, being no metaphysical expert, but concerning the latter, I must point out that there is no question of belief, but of experience. Religious experience is absolute. It is indisputable."

"The thing that cures a neurosis must be as convincing as the neurosis; and since the latter is only too real, the helpful experience must be of equal reality."

Only these copious quotations give, in my opinion, some impression of what Jung purports; but they do it, of course, insufficiently. It would now be easy enough to enter in some arguments with the author. For instance, how can ideas "spontaneously create themselves"? Or how could "the existence of an archetypal image of the Deity" be proved unless one is *a priori* willing to accept it? Or in which sense is a dream or a vision "a natural product"? Or why should only those experiences be "absolute" which Jung understands to be religious ones? Jung explains that there are things we do not grasp with our so-called intelligence, and he discusses such things partly in his own terminology. He does this with profound respect for matters religious which is his, as everybody else's, privilege. I do not care if Jung wants to call his method scientific. I wonder, however, why he insists so energetically on being scientific. After all here are things which just cannot be grasped by the so-called scientific methodologies.

Although Jung declines to be a philosopher or a metaphysician, he does expound a rather clearcut *Weltanschauung*. I feel that whatever will later on happen to this *Weltanschauung*, it is Jung's most important contribution to present-day psychology. It is the *Weltanschauung* of a man who can

emphatically say "I am convinced of what I *know*" (the italics are Jung's), and who is able to continue wondering with naive enthusiasm. It is a *Weltanschauung* of a man of unusual erudition and wisdom.

EUGEN KAHN, M. D.,
Yale University.

SOCIALIZED MEDICINE IN THE SOVIET UNION. By *Henry E. Sigerist, M. D.* (New York: W. W. Norton & Co., Inc., 1937.)

Before one has proceeded far in the introduction of this book one is aware of a growing impression that he is reading propaganda; as he approaches the body of the work he is sure of it. There results an uncomfortable state of mind ill suited to a sympathetic perusal of a work dealing with a scientific subject. Propaganda is a proper object of scientific study—but that is an entirely different matter.

To orient ourselves we may perhaps begin with a quotation or two from the introduction. In the Soviet Union there has arisen "a new type of society in which for the first time in history man is not exploited by his fellow-man." May we be pardoned for annexing to that statement a recent remark by Comrade Hitler: "I trust no mother will ever have cause to weep because of any action of mine."

Dr. Sigerist is the William H. Welch Professor of the History of Medicine in the Johns Hopkins University, his historical and biographical studies are well known and one might have looked to him for a more calmly judicial presentation of medical developments in Russia, which would have had much greater value as a work of reference than can be assigned to the present work. "It is exceedingly difficult," the author concedes, "to study the Soviet Union in a detached way." This is perhaps a consequence of the fact that he had been "familiar with the socialist literature since my early student days." It is hardly reassuring to find through the text constant references to daily newspapers as sources of information. One is unaccustomed to expect such references in support of observations or opinions in reputable scientific publications. This practice Dr. Sigerist justifies as follows: "In a country that develops so rapidly books often have no time to be written, one has to obtain information from newspapers. In our countries this would be a very doubtful source. It is different in the Soviet Union where *Pravda* represents the voice of the party, *Izvestia* the voice of the government." Just so! And one recalls the fate of Radek in one of the early purges in Moscow last year, despite his long associations with one of the newspapers referred to.

Following the introductory chapter, which may be summed up as a compound of eulogy of the Soviet Union and criticism of "capitalist" countries, the author discusses "The Background of Soviet Medicine," wherein he sets forth at some length the Marxian philosophy, presents a picture of Tsarist Russia including an outline of Russian medicine before the war, with the great Pavlov as the connecting link between the medical science of old Russia and that of the new régime, and finally describes the new social order following the Revolution of 1917.

Between the old régime and today have intervened 21 years during which remarkable advances have been made, notably in preventive medicine and public health. It would be remarkable indeed if Russia had not participated in this progress, whatever her form of government. With respect however to the view that signal progress has been made in the U. S. S. R. in the control of communicable diseases, the reviewer's attention has been called to the reports of Narkomsdrav (the People's Commissariat for the Protection of the Public Health) for the year 1935, submitted to the Epidemiological Intelligence Service of the Health Organization of the League of Nations, in which it is recorded that in Moscow alone during that year there were between 8500 and 9000 notified cases of diphtheria. Comparison of these figures with data from any other large city in Europe or North America would seem to leave little room for satisfaction in public health achievement in the U. S. S. R. in the control of this preventable disease.

The program of Soviet medicine is very comprehensive, in keeping with the modern conception of health with its ever expanding boundaries. To the various features of this program Sigerist's book attempts to do justice. In a chapter devoted to "The Principles of Soviet Medicine" he points out as main features that medical service is free and available to all, that prevention is a foremost consideration, that all health activities are directed by central bodies and can therefore be planned on a large scale. The rise of social insurance is traced, its beginnings dating back to pre-revolutionary days. Centralized control dates from 1918 with the establishment of the People's Commissariat of Health. Imposing figures are quoted to indicate achievements under the Five-Year Plan, including increase in the number of physicians, health budgets, hospital beds.

The actual machinery of administration of health agencies is dealt with in a separate chapter, "The Organs of Soviet Medicine," in which the administrative structure of the country as defined in the Constitution is set forth. Here are described also the training of physicians, the revisions of the medical curriculum, functions of the "Middle Medical Personnel" (doctor apprentices, midwives, nurses, etc.).

Much space is devoted to the organization of labor, the health protection of labor groups, questions of rest, recreation and physical culture, state-operated health resorts, food and housing problems. The death rate from pulmonary tuberculosis, according to Sigerist's figures for 1913 and 1931 had been reduced by one-half in the cities of Leningrad and Moscow. In these centers the average number of prostitutes before the revolution was reported as 25,000 to 30,000. By 1928 the number in Moscow was said to be reduced to about 3000 and by 1930 to about 800.

One is struck by the small number of hospital beds for mental patients as shown in the figures of the First Five-Year Plan. In 1932 the total number of hospital beds in the U. S. S. R. is shown as 405,800. The total number of beds for the mentally ill was 42,600. Light is thrown on this situation by the comment that "the policy is to hospitalize mental cases only if it is absolutely unavoidable."

Throughout this book of praise of Soviet Medicine, the author loses no opportunity to reflect unfavorably upon conditions and practices in "capitalist countries." Conditions and practices in the U. S. S. R. as reported by other and probably no less competent observers than Dr. Sigerist do not appear in so favorable light as that which he throws upon them. His partisanship may possibly be discerned in a specimen passage in his Epilogue. "All that has been achieved so far in five thousand years of medical history, represents but a first epoch: the period of curative medicine. Now a new era, the period of preventive medicine, has begun in the Soviet Union. . . . . Since I have studied the Soviet Union, I know that there is a future for mankind; that whatever may happen to the Western world, there is a future for human civilization."

A great amount of work has gone into the making of this book and it contains much valuable information. That it is a safe guide for the promoters of socialized medicine in America is at least open to question. Reports which come out of Russia have been notoriously conflicting. It is necessary to read both sides, and then for the present to reserve judgment. As an antidote to overenthusiasm such as the present volume seems calculated to inspire, one may read Andre Gide's "Back from the U. S. S. R." and then his "Afterthoughts on the U. S. S. R." and then Eugene Lyons' "Assignment in Utopia."

A significant fact is pointed out by a public health authority whose reported observations are also entitled to respect. He states: "If the Soviet Union is a paradise and Soviet medicine socialized in the Stalin fashion is so advanced and forward-looking, it is strange that it has had so little influence in Norway, Sweden, Denmark, Finland, Estonia, Latvia, Lithuania, Poland or Czechoslovakia. All of these are neighboring states. In none of them has there been the slightest tendency or inclination to adopt or adapt any of the remarkable institutions which so many writers from the United States of America (including professors of the history of medicine) have described in such glowing terms."

C. B. F.